

1876-7.

NEW SOUTH WALES.

Legislative Council.

OYSTER CULTURE COMMISSION.

REPORT

OF THE

ROYAL COMMISSION,

APPOINTED ON 25th SEPTEMBER, 1876.

TO INQUIRE INTO THE BEST MODES OF CULTIVATING THE OYSTER, OF IMPROVING, AND MAINTAINING THE NATURAL OYSTER BEDS OF THE COLONY, AND ALSO AS TO THE FEASIBILITY OF MEANS TO CARRY OUT THESE OBJECTS.

BY THE

MINISTER OF AGRICULTURE

AND

APPROVED.

ORDERED BY THE HOUSE OF REPRESENTATIVES

2nd May 1877.



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NEW SOUTH WALES.

Legislative Council.

OYSTER CULTURE COMMISSION.

REPORT

OF THE

ROYAL COMMISSION,

APPOINTED ON THE 29TH SEPTEMBER, 1876,

TO INQUIRE INTO THE BEST MODE OF CULTIVATING THE OYSTER, OF UTILISING,
IMPROVING, AND MAINTAINING THE NATURAL OYSTER BEDS OF THE COLONY,
AND ALSO AS TO THE LEGISLATION NECESSARY TO CARRY OUT THESE OBJECTS;

TOGETHER WITH THE

MINUTES OF EVIDENCE,

AND

APPENDICES.

ORDERED BY THE COUNCIL TO BE PRINTED,

3 May, 1877.



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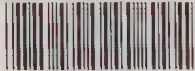
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MUSEUM OF VICTORIA



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Commission.

VICTORIA, by the Grace of God, of the United Kingdom of Great Britain and Ireland, Queen, Defender of the Faith, and so forth,—

To our trusty and well-beloved—

The Honorable THOMAS HOLT, a Member of our Legislative Council of our Colony of New South Wales;

The Honorable JOHN BOWIE WILSON, and

JAMES SQUIRE FARNELL, Esquire, a Member of our Legislative Assembly of our said Colony.

Greeting:

Know ye that we, reposing great trust and confidence in your ability, zeal, industry, discretion, and integrity, do by these presents authorize and appoint you as hereinafter mentioned to make a diligent and full inquiry as to the best mode of cultivating the Oyster, of utilizing, improving, and maintaining the natural Oyster Beds of the Colony, and also, as to the legislation necessary to carry out these objects, with a view of offering such suggestions as you will think desirable for the framing of new laws and regulations thereto: We do by these presents give and grant to you, at any meeting or meetings to which all of you shall have been summoned, full power and authority to call before you all such persons as you may judge necessary, by whom you may be better informed of the truth in the premises, and to require the production of all such books, papers, writings, and all other documents as you may deem expedient, and to visit and inspect the same at the offices or places where the same or any of them may be deposited, and to inquire of the premises by all lawful ways and means: And our further will and pleasure is that you, after due examination of the premises, do and shall, within the space of three months after the date of this our Commission, or sooner if the same can reasonably be, certify to us, in the Office of our Secretary for Lands, under your hands and seals, what you shall find touching the premises: And this Commission shall continue in full force, although the proceedings thereunder shall not be continued by adjournment from time to time, and you may from time to time, if you shall see fit, without waiting for your full and complete Report, certify your several proceedings into our said Office, as the same shall be respectively perfected: And we hereby command all Government Officers, and all other persons whomsoever within our said Colony, that they may be assistant to you and each of you in the execution of these presents: And we appoint you, the said Thomas Holt, to be President of this our Commission, and do give you power at your discretion to procure such clerical and other assistance as you may deem necessary for enabling you to execute this our Commission.

In testimony whereof, we have caused these our Letters to be made Patent, and the Great Seal of our Colony to be hereunto affixed.

Witness our trusty and well-beloved SIR HERCULES GEORGE ROBERT ROBINSON, Knight Grand Cross of our Most Distinguished Order of Saint Michael and Saint George, our Governor and Commander-in-Chief of our Colony of New South Wales, at Government House, Sydney, in our said Colony, this twenty-third day of October, in the year of our Lord one thousand eight hundred and seventy-six, and in the fortieth year of our Reign.

(L.S.) HERCULES ROBINSON.

By His Excellency's Command,

THOS. GARRETT.

Entered on record by me, in Register of Patents, No. 10, pages 414-15-16-17, this twenty-third day of October, one thousand eight hundred and seventy-six.

HENRY HALLORAN,
(For the Colonial Secretary and Registrar of Records).

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REPORT.

To His Excellency SIR HERCULES ROBINSON, Knight Grand Cross of the Most Distinguished Order of St. Michael and St. George, Governor and Commander-in-Chief of New South Wales, &c., &c., &c.

MAY IT PLEASE YOUR EXCELLENCY,—

The Commissioners appointed to inquire into the best mode of cultivating the oyster, of utilizing and improving and maintaining the natural oyster beds of the Colony, and as to the legislation necessary to carry out these objects, beg to state that, having given the subject their most earnest attention, having obtained all available information respecting oyster culture in other countries, having taken evidence from persons practically engaged in that pursuit in Australia, and having caused the principal oyster-bearing rivers to be examined and reported on, not only as to their present state but also as to their capabilities of improvement, have the honor to report as follows:—

1. The climate of New South Wales is pre-eminently suitable for the breeding, growth, and fattening of oysters; that under proper management, the oyster may be produced in the Colony in the greatest perfection, the greatest profusion, and probably at a cheaper rate than in any other part of the world. All authorities concur in representing the oyster as a food of great dietetic value. In Europe and America the cultivation of the oyster is an industry of great commercial importance, and there is every reason to believe that it may be made even more valuable in Australia; but, to obtain the full measure of the results that are possible, the natural advantages of our oyster fisheries must be improved by art and culture—and must be carried on with the same close regard to the conditions of success that is found necessary in other pursuits. Oyster culture, like agriculture or grazing, requires an intelligent industry in order to turn natural advantages to the best account.

2. As to the commercial value of oysters, the Royal Commission (Ireland), 1870, report as follows: "The value of the oysters consumed in England annually is estimated at £4,000,000 sterling, and there is no doubt that double that quantity would find ready consumption, if obtainable." And in a foot-note on the same page of their Report (p. 31) the Commission quote the following passage from the "Popular Science Review":—"Such is the importance of this branch of commerce, that 700,000,000 of oysters are annually consumed in London alone, and quite as many, if not more, in the provinces. Now, supposing we value them at 6d. a dozen, which is certainly below the ordinary selling price, we shall then have an annual expenditure in England of about *three millions sterling* in oysters alone. Could any fact," they say, "more powerfully attest the value of this branch of commerce?" (Mr. Buckland, in evidence he gave before a Select Committee of the House of Commons, said he had paid as much as 3s. 6d. a dozen for oysters (natives) or seven times the value given as above in the "Popular Science Review.") Bertram, in the "Harvest of the Sea," estimates the number of oysters consumed in London at nearly 800,000,000. In Chambers's Encyclopædia it is said "the oyster trade in New York amounts in value to £1,250,000 per annum"; but from Baltimore it was recently stated, in the newspapers, that 40,000,000 tins of preserved oysters are annually exported, of the value of about £2,000,000 sterling.

3. From the above statements as to the value of oysters for home consumption and export, and in view of the fact that this climate is so admirably adapted for producing oysters in quantities almost without limit, and at the minimum cost, it would naturally be supposed that the oyster business in this Colony was equal in importance to that in any other in commodity, with probably the sole exception of wool; but so far from this being the case, we regret to say that the home consumption of oysters (as compared with the population) is small, the export of preserved oysters nil, and the shipment of oysters to the neighbouring Colonies will probably not exceed in value £10,000 a year. But, what may seem still more strange, this great oyster country is actually importing preserved oysters from America! We have not been able to ascertain from the Custom House the value of the American oysters imported into Sydney, but, as we have reason to believe that tinned oysters are to be had at the stores in almost every town in the interior, the quantity imported cannot be very inconsiderable. We hope, however, that the time is not far distant when the importation of oysters into Sydney will be deemed as great an inversion of trade as carrying coals to Newcastle.

4. The first thing necessary in oyster culture is *to secure the spat*. It must be omitted in warm weather, and have some hard substance to adhere to, or it will be irrevocably lost. The Royal Commission (Ireland, 1870) say in their Report: "The great object of oyster culture is to secure the spat." And with respect to the grants or licenses of the Board of Public Works (in whom the management of the Irish Sea Fisheries was vested up to the year 1869), they say, "most of them must be regarded as total failures as far as the production of oysters—the greatest object of all—is concerned. In many instances the oysters laid down have fattened, and the grants have thus proved advantageous to the grantee, but this is a matter of small moment in comparison with the main object—*increased production*."

5. The climate of New South Wales appears to be as superior to that of England in respect to the production and preservation of spat as it is for the production of the orange or the grape. In illustration of this we quote from evidence given last year before a Select Committee of the House of Commons, and also from evidence given before this Commission.

Mr. George Baker, a member of the Whitstable Oyster Company, examined by the said Select Committee of the House of Commons:—He attributes the scarcity of oysters to there being a scarcity of spat for a number of years. The largest fall of spat he has ever known were in those years which were extraordinarily hot. He believes that warm weather and still water are the most necessary conditions for a successful spat. He attributes the small fall of spat chiefly to the cold summers.

Mr. G. Harvey, oyster merchant, examined by the Committee:—He agrees with the former evidence, that a warm season is undoubtedly required to obtain a successful spat.

Mr. H. S. Goody, solicitor and clerk to the Colchester Oyster Fishery examined by the said Committee:—For about twelve years there had been very little spat in the Colne. The failure was attributable to unfavourable seasons. If they had had hot weather, a sudden cold disappointed all their hope of spat.

Mr. J. Wiseman, examined by the said Committee:—He has cultivated oysters about twenty-five years, and his family have cultivated oysters in that district for about 300 years. He attributes the scarcity of oysters entirely to the unfavourable spawning seasons for the last ten or twelve years. He is of opinion that it is entirely attributable to the want of a high temperature. He has noticed for the last twelve years that the hotter the summer the greater the spat, and the colder the summer the less the spat.

Mr. H. Polley, fisherman, examined by the said Committee:—He said it is only favourable summers that will increase the supply of oysters, and we have not had that lately; heavy gales of wind during spawning time are quite as detrimental as frosty nights.

Mr. Frederick Wiseman, examined by the Committee:—He attributes the present scarcity of oysters to the want of spat during the last seven or eight years, which is to be ascribed to the low temperature of the water and strong winds during the spatting season. He says: It is simply temperature—temperature—temperature; we cannot fight against Providence; he should like to have an oyster bed in a locality where as high a temperature as 84 degrees is attained; he will stake his own existence that the scarcity of oysters may be attributed to the continuous bad seasons we have had.

Mr. William Burt, oyster merchant, examined by the Committee:—He attributes the cause of the decrease of oysters to the want of warm weather during the spatting months.

Mr. Blake, Inspector of Irish Fisheries, examined by the Committee:—The French system of oyster culture is in many respects a great success, but they have what we have not, a climate favourable to it; give us the French climate and the proper temperature, and at the right time, and you will see very astonishing results.

Mr. F. Buckland, examined by the said Committee:—You have to give oysters warmth (heat if you like) and quietness. For many years there was no fall of spat in the west of England, and in 1864 Mr. Wiseman and I considered the matter, and we saw that it was absolutely necessary to consult Nature; I went to the Isle of Ré to examine what I could see there. What was the first thing we saw there? We saw vines; we looked down from the vines on to the oyster beds. There are no vineyards in Essex. The same temperature which makes the vines grow makes the oysters spat; you have turnips, not vines, in England, and this is the principal reason why the French have succeeded.

Mr. Frank Buckland, in a letter to the *Times*, dated 22nd August (1876), says: "The cause of the scarcity of oysters, of late years, is without doubt attributable to the want of a fall of spat. * * * If the lambs die, where are the sheep to come from? So, if the infant oysters die, there will be no five and six year old oysters to pack in barrels at Christmas time; if at the time of their birth the water is cold and the weather boisterous, they die; if the weather is warm and tranquil they live. * * * Heat and

and tranquillity being therefore necessary, * * * he would like to try to breed oysters in a hot-house, with the temperature of the water up to 70 deg." Such artificial contrivances may be expedient in England, but owing to the mildness of the Australian climate the moment the young oyster has fixed himself to a holding on place he is perfectly safe, and only wants a favourable position to grow and develop; and Mr. Buckland in his evidence, describes an oyster as being, when born, an image of his mother, shell and all; he can open and shut his shell, and has the power of volition. In England, oysters the first year of their age are called *spat*, when two years old they are called *brood*, when three years old they are called *ware*, and it is not until they are four years old that they are called *oysters*.

The evidence above quoted as given before a Select Committee of the House of Commons, with respect to the failure and scarcity of spat, contrasts strikingly with the evidence given before this Commission a few months later as to the large production and unutilized superabundance of spat in this Colony.

Mr. Gibbins (one of the lessees) says that he never made any attempt to collect the spat by means of wood or stone placed in the rivers; he had no occasion for any artificial means of collecting it, there is such an enormous quantity of spat sticking to the rocks. From the time you enter the Hawkesbury River you may say there are 100 miles of nothing but rocks, and the spat sticking to them.

Mr. J. Emerson (one of the lessees):—They have such large quantities of spat lying about, any quantity of it can be collected. They have large quantities on the George's River; the banks are covered with it, except where there is sand. There is also a vast quantity of spat in Port Jackson. You can go up Middle Harbour and find any quantity of it, and no use is made of it. If it were put in good fattening ground it would grow and produce good oysters. He thinks that we are so prolifically supplied people will not turn their attention to it. If we did not get it we should have to adopt artificial means, such as are used in other countries. He thinks this profusion of young oysters is due almost exclusively to the genial warmth of the climate.

Mr. P. James:—He has never considered it necessary to go to any expense in securing spat, because there is plenty of spat to be had without it; the supply is almost inexhaustible; he has noticed countless millions of oysters sticking to the rocks in Port Jackson.

Mr. W. H. Bell:—He has frequently observed how the rocks in the harbour of Port Jackson are plastered with spat. He has no doubt that it would be an advantage if this spat were carefully knocked off the rocks and planted. The climate of this Colony is favourable to the cultivation of oysters. He was about twenty or twenty-two years of age when he left Whitstable. He has seen a good deal of the working of that Company; they breed only a small portion of the oysters they fatten; they purchase brood and ware at various places. At low spring tides there are a great number of persons collecting young oysters—any size that will bear removing. He thinks the Company purchases four-fifths of their oysters; they would certainly not be able to carry on their operations if they had not the opportunity of purchasing brood.

Mr. W. J. Langham, Inspector of Oyster Beds:—He said there were large quantities of oysters on the rocks and mangroves going to waste which might be converted into excellent food. Captain Griffin has done a great deal for a place like that he has at Limeburner's Creek. He utilizes all the spat he can get. He wished to get some from the rocks at Port Stephens, but Captain Griffin told him the lessees refused to let him have any; they preferred seeing it going to waste rather than allow him to utilize it. He thinks there is enough spat going to waste in Broken Bay to supply half the rivers working at the present time. There are oysters sent to market which, in his opinion, are not marketable, and which should not be sold as human food, but if they were laid down on suitable soil they would grow and become fat and good oysters. All the lessees seem to care about is to get as many oysters as they can. With respect to the rivers not leased, but closed, Mr. Langham said—"There is an immense quantity of spat at Port Hacking and no use is made of it; it was closed, at the request of the lessees, to prevent stealing. There are great quantities of young oysters on the rocks in Port Jackson; the Government do not make any use of them themselves, and will not allow any one else to do so."

6. We have thought it expedient to quote the above evidence at some length, in order to show the vast natural capabilities of this country for breeding oysters, and also the waste of young oysters which in England would be of high value, and which waste is as much to be deprecated as the former practice of burning oysters for lime. Bertram says—"The fisher people at Colchester and other places prowl about the sea shore and pick up all the little oysters they can find—those ranging from the size of a three-penny piece to a shilling, and persons and Companies having layings purchase them to be fattened for the table. At other places the spawn itself is collected, by picking it from the pieces of stone or the old oyster shells to which it may have adhered, and it is nourished in pits as in Burnham, for the purpose of being sold to the Whitstable people, who carefully lay it on their ground. The stock of oysters in the private layings of the Whitstable Company is said to be of the value of £200,000.

7. The breeding and fattening of oysters are as distinct as the breeding and fattening of cattle. In France the breeding is carried on in "*parcs*" and the fattening in "*claires*," which processes we will hereafter explain. In England there are many persons and Companies who never breed any oysters, but who do a very considerable business in buying spat, brood and ware, that is, young oysters one, two, and three years old, which they put in their "*layings*" or fattening beds to grow and fatten. The collecting of these very young oysters at the low tides gives employment to many persons, and the spat they collect is matured into excellent food which would otherwise be lost.

Mr. G. Baker, a member of the Whitstable Company, said, in the evidence he gave before the Select Committee of the House of Commons (1876), (to which we have alluded) he does not think his Company breeds a fifth of the oysters it sells. It has imported oysters during the thirty-five years he has been connected with it. If it were prevented from importing oysters from other grounds, it would bring the Whitstable Company to an end.

Mr. H. S. Goody, solicitor and clerk to the Colchester Oyster Fishery Company, said, in the evidence he gave before the said Committee, the Colne and the Blackwater fisheries join on to each other. The former is good fattening, and the latter good breeding ground. If the Colne Company had not been able to purchase brood, the fishery must have entirely failed. During the five years 1871 to 1875, the Colne Company have been supplied with brood at a cost of £16,138. He said, what astonishes any one who looks at the map and sees where the two rivers join (Colne and Blackwater), that in the former there is a large deposit of large oysters and no brood, and in the Blackwater few large oysters and plenty of brood.

Mr. Hole, oyster merchant, gave the following evidence before the said Committee:—Theirs is a growing and fattening process; they do not profess to be breeders; they never get any spat upon fattening grounds—such a thing was never known to be—the oldest servant they have never heard of such a thing. They put down small oysters, and their profit consists in the growth which they make. If they were to touch them in the summer months, they would disturb the beautiful shell growth that is being made, which is very thin. It is not at all injurious to remove brood. Oysters should be moved, just as anything in vegetation is transplanted. Oysters do not begin to thrive and fatten until they are moved. They import oysters from Ireland and all parts, and keep Falmouth as a sort of half-way house from Ireland. Oysters will not fatten at Falmouth; they are very poor, starved-looking things, and have not that nice fatness they acquire afterwards. They bring oysters into the Thames and Medway for the purpose of fattening them. The best fattening beds are supposed to be creeks and inland waters.

Mr. C. W. Harding gave evidence before the said Select Committee:—Is Bailiff of the Lynn Oyster Fisheries. He finds that the shallower the water the fatter the oysters are, and the deeper the water the poorer they are.

Mr. F. Pennell gave evidence before the said Select Committee:—He said it is very rarely that on a fattening bed the spat is produced, and if so that it comes to anything. He thinks a fattening oyster is always fit for market, and breeding oysters are rarely found fat. A fattening ground is usually a small creek, with muddy banks, and the bed is made in the middle with shells, upon which the oysters are laid. The fattening grounds are more or less all artificial. He would not prohibit the sale of oysters from a private bed, unless it was necessary to do so, in order to assist in carrying out some law, to enforce a close time on public beds; then he would stop consumption, but not for any other purpose. The law of nature is more or less suspended, as regards oysters being sick, on artificial fattening grounds. He has often made a hearty lunch of oysters in summer, and certainly thinks they are really fit to eat. He thinks the Committee has had evidence that only one oyster in ten, as a rule, spats, and all the rest would be fit to eat.

Mr. John Bullock, examined by the said Committee:—He has been thirty years connected with the Blackwater or Port Fisheries, where there are 400 or 500 vessels employed dredging in that river. He believes it to be a good river for breeding and growing oysters, but not for maturing and fattening them. He dredges and sells the oysters he has caught to Companies and private individuals, to mature and fatten for the market. He does not think it impoverishes the bed by carrying off the brood—he thinks it is beneficial.

Mr. Frederick Banyard, examined by the said Committee:—He has been engaged in oyster culture and oyster dredging from twenty to thirty years. He works upon his private ground or "*layings*," which is about an acre and a half, and when he is not so employed he works upon the Blackwater. He thinks, and indeed he is sure, that the Blackwater is one of the most productive spitting grounds in the kingdom. He says, brood growing upon a nice clay bottom would fatten as much in one year as another would upon a stony bottom in two years. He has private (oyster) ground upon a creek running into Blackwater, and 300 fishermen belonging to Mersea and Tollesbury have ground like that. They certainly are valuable.

Mr.

Mr. J. A. Blake, Inspector of Irish Fisheries, examined by the said Committee :—He said a place that is fit for fattening is not good for production, and, where production is most successful, there is the least done in the way of flavouring and fattening oysters. For example, one Honorable Member of this Committee has got a very good place for production, which he (Blake) has recently examined at his request, but it will never fatten nor flavour oysters, in his opinion. He must either send his oysters to where there is a marly soil like the London blue clay, or he must make fattening beds of his own by bringing the suitable soil. He is very strongly in favour of private fisheries.

Mr. S. Walpole, Inspector of Salmon Fisheries, examined by the said Committee :—He said there are a great many beds in England where the oysters are never sold for purposes of food, but to be laid down on other beds, in order that they may be fattened and brought to market subsequently. He thinks, with great submission to the Committee, that the chief object ought to be to protect the breeding beds.

Dr. Kemmerer, one of the most eminent of French oyster culturists, is of opinion that the oysters in the claires (fattening beds) are usually sterile, and that over-fatness is the cause in most cases.

8. From the evidence taken during the same year (1876) before a Select Committee of the House of Commons, and this Commission, it would appear that in England it was considered to be all-important to protect the breeding beds and secure the spat, whilst in this country the spat was so superabundant that it was not thought to be worth collecting and placing in suitable ground where it would grow and fatten. The time, however, will come, and probably is not far distant, when the immensity of oyster spat in this Colony will be utilised, and when oysters will become an important article of food for home consumption, and of commercial value for exportation; and when we shall not be satisfied with utilizing only what Nature so lavishly bestowed upon us without labour, but we shall also employ artificial means to breed as well as to fatten oysters.

9. The oyster is generally supposed to be hermaphrodite, and the spatting usually takes place when the parent oyster is from three to four years old. An oyster is estimated to produce between one and two million oysters at a birth, and of this spat a large proportion is destroyed by fish, crabs, and other enemies, or from the want of some hard substance to which it can adhere. The whole of the spat would perish if there were no other holding-on place for it than sand or mud.

10. With respect to the best kind of collectors to be employed, cultivators must be governed by the facilities offered in the neighbourhood, and they are very various. For instance, where wood is plentiful, as in this country, the best and cheapest means for securing the spat is probably the branches of trees, especially those of the swamp oak, but in places where there are few trees other means must be adopted. At the Island of Ré, where there are few trees, stones and tiles have been largely used as collectors of oyster spat. At one time there was quite a *furor* for oyster culture on that island, and several thousand pares, as they are called, were constructed on the foreshores of that island. Bertram, in his "Harvest of the Sea," says :—"The secret of there being only a holding-on place required for the spat to insure an immensely-increased supply of oysters having been penetrated by the French people, the plan of systematic oyster culture was easy enough. A few initiatory experiments speedily settled the fact that oysters could be grown in any quantity. Oyster culture was begun as recently as 1858 at Ré, and in 1868 there were on that island upwards of 4,000 pares and claires. The system of breeding oysters, that is, securing the spat in claires, was, Bertram says, inaugurated by a stonemason of the name of Bœuf. He enclosed a portion of the foreshore of the island, about 30 yards square, with a wall of rough stones about 18 inches high, and in this enclosuro or pare he laid down a few bushels of growing oysters. The result of this initiatory experiment was so successful that in the course of a year he was able to sell £6 worth of oysters. Elated by the profit of his experiment he proceeded to double the proportions of his pare, and by that means more than doubled his oyster commerce, for in 1861 he was able to dispose of upwards of £20 worth, and this without impoverishing in the least degree his breeding stock. He continued to increase the dimensions of his farm, so that by 1862 his sales had increased to £40. When the great success of Bœuf's experiments had been proclaimed in the neighbourhood, a little army of about a thousand labourers came down from the interior of the country and, along with the native fishermen, took possession of portions of the shore, which were ceded to them by the French Government at a nominal rent of about a franc a week, to be cultivated as oyster pares. The most arduous duty of these men consisted in clearing off the mud, which lay on the shore in large quantities, and which is fatal to the oyster in its early stages; but this had to be done before the shores could be turned to the purpose for which they were wished. After this preliminary business had been accomplished, the rocks had to be blasted in order to find stones for the construction of the pare walls; then these had to be built, and the pares had to be stocked with breeding oysters, &c. Some gentlemen from the island of Jersey, who visited Ré, report that an incredible quantity of oysters had been produced on that shore, which

a few years ago was of no value; so that this branch of industry now realizes an extraordinary revenue, and spreads comfort amongst families which were formerly in a state of comparative indigence. A series of enormous and unproductive mud banks, occupying a stretch of shore about 4 leagues in length, are now so transformed and the whole place so changed as to appear to be the work of a miracle.

Dr. Kemmerer, of St. Martin's, Island of Ré, has invented a tile which he covers with some kind of composition that can, when occasion requires, be peeled off, and this plan is useful for the transference of the oyster from the collecting place to the fattening claire.

Lake Fusaro is highly interesting as being the first seat of oyster culture. It is the Avernus of Virgil. It is still devoted to the highly profitable art of oyster-farming. The mode of oyster breeding at this place is now, as it was eighteen centuries ago, to erect artificial pyramids of stones in the water, surrounded by stakes of wood, in order to intercept the spawn. Fagots of branches were also used to collect the spawn, which must find a holding-on place within forty-eight hours after its emission, or it will be lost for ever.

The Royal Commission (Ireland) say:—Hurdles and fascines have been found to answer well as collectors, and they will be found cheaper. They are fixed in rows, by means of pegs, about 2 or 3 feet above the oysters, which are scattered on the soil under them.

Furze bushes are also found to answer fairly, but fascines and bushes are scarcely so suitable in a tide-way, in consequence of the liability of the twigs to catch weed, break, and float away, when the spat is carried with them. In all cases when wood is employed for collectors, it should be dry, hard, and sapless, and cut, at least, in the preceding season. Oysters are more easily detached from wood collectors; the loss or damage to the shell breaking them off is least upon fascines, as the twigs are easily broken off; the loss is greater on hurdles, greater still on tiles, and greatest of all on stones. The young oyster, though somewhat malformed at times on twigs, soon regains its shape when detached without damage. Tiles are largely used in France because they are cheap—about £2 per thousand. One cultivator, at Auray, possesses 200,000 tiles, and on these he obtained, in 1869, six millions of oysters.

11. In New South Wales the production of oysters is immensely beyond our present requirements, and Nature has also provided us so amply with holding-on places (rocks, mangrove trees, &c.) for collecting the spat, that it appears almost superfluous for us to allude to the subject of oyster-breeding; but this state of things may not always continue, and at some future time information on breeding oysters will be as useful as that on the growth and fattening of oysters is at the present time.

12. As Regards the Fattening of Oysters.—The nature of the bed or soil on which it rests is a matter of the greatest importance. Bertram says the beds of "natives" are all situated on the London clay, or on similar formations. * * * The portion of the beds set apart for the rearing of "natives" is as sacred as the waxen cells devoted to the growth of queen bees. But, although called "natives," in many instances they are not "natives" at all, but are, on the contrary, a grand mixture of all kinds of oysters, being brought from Prestonpans and Newhaven, in the Firth of Forth, and from many other places, to augment the stock. Many circumstances highly favourable to the growth and fattening of oysters are the reverse for successful breeding. Growth and fattening will proceed where there may be a large amount of fresh water and a strong current: the former would prove prejudicial to spatting, and the latter tend to prevent the adhesion of spat—at least in the locality at which it is voided. It is a remarkable fact that there are no fine flavoured oysters where there is not fresh water, and this fact was noticed by Pliny more than eighteen hundred years ago. The Royal Commission (Ireland) says: For fattening there are few places better than a salt marsh. The fattening ponds (termed claires) at Marennnes and La Tremblade, of which sketches are appended, are at both places formed out of salt marshes, and are in many instances only old disused salterns for salt pans, in which rough salt was made. The number of oysters laid down in claires is proportioned to the time it is intended they should remain there; for as the food of the oyster is limited, a smaller number will of course fatten more rapidly than a larger number. The average distribution is about two or three to the square foot. The oysters thus fattened are of excellent flavour and quality.

Mr. Cholmondeley Pennell, Inspector of the English Oyster Fisheries, who was sent by the Board of Trade to inspect and report upon the French modes of oyster culture, says in his report:—"The fattening pits (claires) are excavated from one to two feet deep, and are of all shapes and sizes, from ten to sixty yards square, which latter is the maximum, the usual size being from forty to fifty yards square. It is in these pits that the celebrated green oysters are fattened. Round the margin of the claires, at Marennnes, a trench or channel is excavated a yard or two wide, and an extra foot deep, the object of which is to equalize the temperature when the shallower water becomes too hot or too cold. One portion of the

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side of each claire is cut down to the depth at which it is wished to keep the water; this depression communicates with the nearest gully or natural channel, and at spring tides (when only the water in the tides can be changed) the tide, winding its way up the channel, finds ingress and egress. The same channel also serves to carry away the waste water whenever it is wished to lay the pits dry, for which purpose the simple method is adopted of digging a hole in the clay bank, which is readily stopped up again when desired.

During the summer months the sea has free ingress and egress to the claires to purify them, and the coating of blackish mud which has collected on the surface during the preceding year is also removed. In August they usually stop up the gaps in the banks, in order that the continued action on the soil and water may produce the greenish creamy scum with which the surface mud of all the claires is covered. Oysters in the claires do not begin to fatten until late in the autumn and winter. A large quantity of oysters will live well in the pits, but they will not fatten if too numerous. There is no doubt that the fewer oysters that are placed in a pit, the more food there will be for each of them and the quicker they will fatten. Wherever these claires have been constructed they have succeeded, and, when once constructed, the labour and expense of working them are small. The claires at Marennes occupy a strip of low-lying clay country on the river Sendre. The soil is marl, that is, a mixture of chalk and clay, and is of various colours—greyish, blue or black, greyish yellow, and in some cases red. The muddy or marly bottoms are most favourable to the growth and fattening of the oyster. Professor Sullivan says, “the soil of all places successful as oyster fattening stations contains more or less of a fine flocculent highly hydrated silty clay, abounding in vegetable and animal matter, derived chiefly from diatomacea, rhizopoda, and other microscopical organisms; and that the soils of those places which have proved successful as breeding stations always contains some of it, but not necessarily as much as those which fatten; and lastly, that in those places which have proved failures, this peculiar kind of mud is either wholly absent, or inferior in quality and quantity.”

13. The Royal Commission (Ireland) say, fruitful oyster mud may vary within very wide limits, from almost pure sand to almost plastic clay. In the very sandy grounds, there must, however, be always a sufficient quantity of highly hydrated clay to render the sand adhesive and to preserve it from becoming a mere loose running mass.

14. In the clayey grounds there must always be calcareous mud to make the clay porous and prevent it becoming too hard,—clay marls, with some intermixed sand, being perhaps the best of all materials for oyster grounds.

15. The earth known as the London clay appears to be the soil peculiarly adapted for oysters. It may be well here to explain that the term “London clay” is employed in a general and a special sense. In the former it is used as a collective name for a number of beds of the old tertiary formation, consisting of gravels and sands below and of clays above. In the special or limited sense, it is applied to the bluish or blackish clay, sometimes mixed with a greenish coloured earth and white sand, which forms the upper parts of the beds just mentioned. London clay is plastic clay, not differing much in chemical composition from ordinary potters’ clay. All fruitful oyster muds contain organic matter, always due, in part, to the presence of infusoria, and sometimes, in part, to small algæ or coniferovæ, remains of shell fish, and other marine creatures.

16. Bertram says, one of the most lucrative branches of oyster farming in France is the fattening of oysters in claires, at Marennes, which have been brought from the Ile de Ré breeding pears. In the claires the oysters become green, and of considerably more value than the white oyster. The peculiar colour and taste of the green oyster are imparted to it by the vegetable substances which grow in the claires. The industry carried on at Marennes consists chiefly of the fattening in claires; and the oysters operated upon were at one period of their lives as white as those which are grown at any other place; indeed, it is only after they have been steeped a year or two in the muddy ponds (claires) of the river Seudre that they attain their much-prized green hue. The ponds (claires) for the manufacture of these green oysters—the oyster *par excellence*, according to all epicurean authority—require to be watertight, for they are not submerged by the sea, except during very high tides. Each claire is about 100 ft. square; the walls for retaining the waters require, therefore, to be very strong. They are composed of low banks of earth, five or six feet thick at the base, and about 3 ft. in height. These walls are also useful in forming a promenade, on which the watchers or workers can walk to and fro and view the different ponds. The floodgates for the admission of the tide require also to be thoroughly watertight and to fit with great precision, as the stock of oysters must always be covered with water, but a too frequent flow of the tide over the ponds is not desirable, hence the walls, which serve the double purpose of both keeping in and keeping out the water. A trench or ditch is cut in the inside of each pond, for the better collection of the green slime left at each flow of the tide; and many tidal inundations

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are necessary before the clairo is thoroughly prepared for the reception of its stock. When placed in these greening claires they are usually from twelve to sixteen months old, and they must be left for a period of two years at least before they can be properly greened, and if left a year longer they are all the better. Dr. Kemmerer says: "The green oyster has only been regarded as a luxury for the table of the rich, but I would like to see it used as food by every one."

17. In this Colony we have salt water swamps, marshes, mudbanks (or crassets, as they are called), more or less covered by the tides, where claires for the fattening of oysters (and probably also the *greening* of them if required) could be carried on to a very considerable extent. We have the same kind of rich mud as that in the estuary of the Thames, which is so celebrated for fattening oysters. Professor Watt has analysed some of the mud out of one of the bays of the George's River, and found it to be similar to the London clay, of which the Portland cement is made. There is nothing more unsightly than a salt water marsh, and it is probably as unhealthy to the neighbourhood as it is unsightly. Not a blade of grass grows thereon, or indeed anything which is useful for either man or beast. But these marshes may by means of claires become more highly productive than any high dry land however rich. They are capable of fattening oysters and growing grass or vegetables in perfection.

18. In cutting the claires it is not necessary that they should be of any particular shape or size, and it would be absurd to imitate the French in the claires, which were originally excavated for salterns. We learn from some of the witnesses, who gave evidence before a Select Committee of the House of Commons, that oysters grow and fatten the best in creeks and shallow water. Mr. Pennell says:—A fattening ground is usually a small creek with muddy banks, and the bed is made in the middle with shells, upon which the oysters are laid.

19. We think it right to mention, for the information of those who may contemplate making claires for the growth and fattening of oysters, that the experience of Mr. Holt (the Chairman of this Commission) is decidedly against the damming of them. Mr. Holt has constructed claires of more than 30 miles in total length, and he spared no expense in making flood-gates and dams, according to the most approved systems he had seen in France, but he has since had reason to believe that it was a mistake, and he has done away with them entirely, and let the claires have the full benefit of the ebb and flow of the tides, which has caused a very considerable saving in the expense of management, and a vast improvement in the oysters.

20. The green oysters produced in the *stagnant* claires, may, like the huge goose livers produced by keeping geese before hot fires for the *pâté de foie gras*, be appreciated by the French gourmands; but it is a question whether oysters and geese fattened by natural means are not the most wholesome. Monsieur Tandon, in his "*Le Monde de la Mer*" (World of the Sea), says:—"Oysters" (in France) "are put in claires—long canal-like excavations—filled with green, stagnant saltwater. The green matter, which makes the water all but offensive, penetrates the system of the poor Molusks compelled to inhale it. The oyster under this *regime* fattens, and soon obtains that obesity so relished by the connoisseur, but which is really the result of disease induced by the unwholesome water of the claire. Imagine the unspeakable disgust of the oyster after living in the beautifully clear and fresh water of the ocean, at being immured in a stagnant pool, whose water is seldom changed but always charged with filth!" The oyster claires, with the full flow of tides, resemble in many respects the English fattening creeks, with the sole exception that the former are probably more artificial than the latter. In this latitude there is no fear of the young oysters being killed by the frost by being left dry at low tides; on the contrary, there is reason to believe that they are benefited by the change; and at Arcachon, one of the most extensive and prosperous oyster fisheries in France, the oysters are always left dry at low tides. Mr. Buckland, in evidence he gave before the said Select Committee of the House of Commons (1876) said: Oysters have sometimes a very rotten appearance about the shell, like a very old wine cask. This is caused by a sponge called *elione*, which gets into the oyster shell and completely riddles it and makes it quite fragile to the finger. By exposing the oysters to the rays of the sun the *elione* is killed, and it will not live again.

21. The enemies of the oyster, such as the five-fingers, &c., can be seen when walking on the banks, and forked out with the greatest ease; and the oysters when ready for market can be gathered out of the claires as easily as potatoes are dug up in a garden, and at as little expense. Bertram tells us in England the dredgermen on the Colne River Fishery are never paid less than 12s. and sometimes 40s. a bushel for dredging the oysters. What a contrast there is between the cost of gathering oysters out of the shallow claires in this Colony and dredging for them in the deep waters of England.

England. As the climate of New South Wales is equal to that of the finest parts of France, Spain, or Italy; and is equally as applicable to the breeding, growth, and fattening of oysters as to the breeding, growth, and fattening of cattle on the natural pastures, all the year round.

22. Ten or twelve years ago the oyster industry in France was in a high state of prosperity, but five or six years later it was in a most deplorable state, and Mr. Pennell and others gave melancholy accounts of the failures of oyster culture in that country. This did not arise from natural causes, such as frost, snow, floods, &c., which occasioned such tremendous losses of spat and oysters in England, Ireland, and Scotland, but from the negligence and greed of the cultivators. The Royal Commission (Ireland, 1870) say in their Report: There is no reason to doubt that the decline in production (in France) is to be attributed to the neglected state of the collectors, and also to the selling of too many of the parent oysters, and thus annihilating to a considerable extent the source of spat. This, the Commission say, is admitted by the proprietors themselves, who have found their expectations to get spat without parent oysters to be delusive, and they are now taking means to renew the stock of oysters and collectors. The selling of their breeding oysters is but a repetition of the old story of killing the goose that lays the golden eggs. But now the tide has turned, and the French having learned by bitter experience not to trust solely to their fine climate and great natural advantages, have put their shoulders to the wheel, and by skill and industry have turned the bountiful gifts of Providence to good account. Like causes can never operate in New South Wales to injure the oyster industry, from the fact that there are many localities where marketable oysters cannot be profitably dredged for consumption, but where spat can at all times be obtained in any quantity.

23. Mr. Farrar, Secretary to the Board of Trade, in the evidence he gave before the said Select Committee of the House of Commons (1876), said:—"Mr. Pennell was sent by the Board of Trade, in 1868, to inspect the French oyster fisheries, and he gave a most melancholy account of them—nothing could be worse. The Irish Commission confirmed that melancholy account; but now it appears from the official returns of the French Government (1876) that the production has enormously increased. At Marennes the private cultivators have been enormously successful: At Cancale the value of the oysters produced had risen from 97,375 francs in 1869 to 720,800 francs in 1874. The oysterculturists, who have established parcs on the banks of the Anray, gather considerable quantities of young oysters in their collectors, and many of them have already realized important profits. Many of the proprietors of parcs are embarrassed by the abundance of their produce. Mr. J. A. Blake, Inspector of Irish Fisheries, in the evidence he gave before the said Select Committee (1876) said:—"French oysters will cause a great revolution in the oyster trade in England; so that we need to care very little about our own production at all, but look more to the fattening."

24. After carefully reading and considering everything procurable that has been written about a close season for oysters, as well as the evidence taken before this Commission, we have come to the conclusion that a close season is unnecessary, and would be prejudicial to the public interests and to the oyster industry in this Colony. There may be valid reasons for restricting the consumption of oysters to nine months in the year in those countries where, notwithstanding their dearth and scarcity, the people were not satisfied with eating them at one meal a day, but must needs have them (probably because they were dear and scarce) at four meals a day. Mr. Blake, in evidence he gave before the said Select Committee of the House of Commons (1876), attributes the scarcity and dearth of oysters chiefly to the great consumption of them. He says it became the custom in France about fifteen years ago to introduce oysters at four meals—at breakfast, luncheon, dinner, and supper; no entertainment was complete without oysters, and that fashion came into operation in England, and a vast demand for oysters arose, and the enhanced price induced the people to dredge extensively; whilst, at the same time, we began to have bad spawning seasons. There is every reason to believe that oysters that are not sick or spawning are as wholesome food in summer as in winter, and therefore there is no more reason to make a close season for oysters than there is for beef or mutton. Mr. F. Pennell, in evidence he gave before the said Select Committee of the House of Commons (1876), said he would not prohibit the sale of oysters at any time from a private bod unless it was necessary to do so in order to assist in carrying out some law to enforce a close time on public beds; then I would stop consumption, but not for any other purpose. He thinks a fattening oyster is always fit for market; he has rarely known the oyster sick on fattening ground; he has often made a hearty lunch of oysters in summer.

25. Having now indicated the actual resources of this Colony for oyster production, and the need of artificial culture, and the character of the operations suitable, we have to refer to the state and operation of the present Fishery law. The only law in this Colony relating to Oyster Fisheries is the 31 Vic. No. 20, intituled "*An Act to regulate Oyster Fisheries and to encourage the formation of Oyster Beds* (1868)." The preamble of the Act says: "Whereas it is expedient to encourage the cultivation and improvement of oyster fisheries,

fisheries, and to prevent the exhaustion of the oyster-beds in the Colony: Be it therefore enacted, etc. (the 1st clause is a mere interpretation clause, and the 2nd clause is as follows):—"The Governor, with the advice of the Executive Council may, subject to any regulations, * * * demise by auction, or otherwise, for any term not exceeding ten years, any Crown lands being part of the shore and bed of the sea, or of an estuary or tidal water, above or below, or partly above or below, low-water-mark, for or in connection with the laying down of any oyster-bed. The 3rd clause provides that every such lease shall be in writing, etc. On the 15th September, 1871, the Government published Regulations for carrying into effect the "Oyster Beds Act of 1868." The 6th Regulation says, leases shall not include more than *one* mile of the frontage of any river, creek, estuary, or tidal water. This Regulation, it appears, was cancelled with respect to the one mile frontage on the 21st February, 1873. And the 7th Regulation says, parties leasing oyster-beds will be required to enter into a bond for ten times the amount of the annual rent, with two sureties, approved by the Government to fulfil all the conditions of the lease, and also to leave the oyster-bed in as good condition at the termination of the lease as at the time of its being granted. The advertisements calling for tenders from persons willing to lease the oyster-beds for a period of ten years, say, "Each tender must be accompanied by a guarantee from two responsible persons as sureties, agreeing to become answerable for the due fulfilment of the conditions of the lease, etc." The oyster-beds in most of the tidal rivers of this Colony are now held by six persons (the lessees), and the other rivers not under lease are *closed*, at the instance of the lessees, to prevent any oysters being taken out of them to interfere with their monopoly.

26. *Mr. Langham*, the Inspector of Oyster Beds, in his evidence before this Commission with respect to the River Hawkesbury leased by *Mr. Gibbins*, says:—"He should say he claims under his lease 20,000 acres or more. He has laid down 4,000 or 5,000 bags of young oysters for a few months; he shifts them, that is all. There is no proportion at all between what he has taken from off the rocks and mangroves and those that remain; you could not tell where they were taken from, they are like a mere drop in a bucket of water." At another part of the evidence, he said:—"Capt. Griffin is the lessee of Limeburners' Creek. He has done a great deal in laying down or forming oyster-beds, for a small place like that. He utilizes all the spat he can get. Capt. Griffin told him (the Inspector) he wished to have some spat from the rocks on Port Stephens, but the lessees refused to let him have any. Capt. Griffin is the only one he knows of who has strictly complied with the terms of the Act." He gives similar evidence about most of the other leased rivers. The lessees make no use of the spat (that is, for growth and fattening), or only to an inappreciable extent, and although there is such a vast quantity going to waste they will not allow any person to take any.

27. The evidence given before this Commission shows that immature oysters (specimens of which we have seen) are not only sold in Sydney but also in Melbourne, which are not fit for human food. The New South Wales oysters, which ought to be the finest in the world, not only get a bad name in the Colony but also in Victoria. The Inspector says that all the lessees seem to care about is to get as many oysters off the oyster-beds as they can. *Mr. Emerson*, oyster merchant, in his evidence before the Commission, said:—"The sale of these small oysters (such as were exhibited, and which had been bought for the Commission at certain shops in the city) have a prejudicial effect on the public mind to prevent consumption. People who go into a shop and get these small oysters become disgusted; whereas if they got fat and well-flavoured oysters they would make them a regular article of food. *Mr. Emerson* handed in to the Commission a letter he had received from his agent in Melbourne (*Mr. Brooks*), in which the latter speaks of the reckless way the trade is being carried on, and the rubbish that comes from Sydney to the Melbourne market—oysters, he says, that never ought to have been allowed to leave their beds. * * * The result will be, he says, that at the expiration of some of these leases there will be no oysters fit for use. * * * He saw eighteen bags of Newcastle and Broken Bay oysters sold for 20s. ! (This is little more than half the freight, and very little more than the cost of the bags) ! *Mr. Brooks* (*Mr. Emerson's* agent) gives the prices of oysters sold during the last month (September, 1876), which range from 3s. to 30s. per bag. *Mr. Emerson* said he had no difficulty in getting a good price in Melbourne for good oysters, and while inferior oysters were selling at 3s. 6d. per bag in Melbourne, he got from 27s. to 30s. per bag for good oysters. The Inspector laid before the Commission a letter he had received from Melbourne, in which the writer informs him that during December last Newcastle oysters were sold at from 16s. to 22s. 6d.; Clyde River oysters at 20s.; Manning River oysters at from 18s. to 25s.; Cape Hawke oysters at 20s.; Clarence River oysters at from 14s. to 18s. Also, that at auction a lot of Newcastle oysters were sold at from 3s. to 6s. 6d. per bag; and a lot from the Clarence at from 6s. 6d. to 7s. per bag.

28. After carefully considering all the circumstances, we consider it to be our bounden duty to recommend the cancellation by the Government of all the so-called existing leases of natural oyster-beds.

as none of them have been granted according to law. We are of opinion that this is the only wise course the Government can adopt to save the oyster-beds from ruin. If any of the lessees can show that they are entitled to compensation we recommend that they should have it by all means.

29. The system we advise the Government to adopt for the future is not to lease the natural oyster-beds, but to grant licenses to persons to dredge, dive, or get oysters off the beds or rocks, and to charge for each license a small fee, and also a royalty on all matured oysters dredged for sale. We do not recommend any royalty to be paid on the spat, brood, or ware got off the rocks, mangroves, &c., and sold to grow and fatten; but we recommend (without prejudice to any of the provisions in the Lands Alienation Acts) that all lands which are covered by tidal waters should be leased for oyster culture for a term of fifty years, in areas not exceeding 5 acres, at—say 5s. per acre per annum for the first four years, and afterwards 20s. per acre per annum to the end of the lease, provided that during the first four years the said land shall be prepared and stocked with oysters.

30. We believe that the cancelling of the existing leases of natural oyster-beds and substituting the system of licenses will have a very beneficial effect in many respects. The Government will have the power to stop the dredging or diving on the oyster-beds whenever it may be reported by the Inspectors that sufficient oysters have been taken out of a bed, &c., and that there is some danger of the bed, &c., being exhausted if more oysters were removed. The licensees could not complain of the temporary closing of a river, as their licenses would enable them to dredge other beds; and their licenses would always be available for getting oysters off the rocks which are uncovered at low tides.

31. We think a royalty the best mode of raising a revenue for the use of the public waters and the protection of property. Bertram says, every bushel of oysters landed at the Billingsgate market has to pay, for tolls, &c., 8d. per bushel. We think a small royalty will have the effect of putting a stop to the small oysters (rubbish, as it is called) being sent to Melbourne for food. And a good effect will be produced by enabling all persons of good character to obtain a license to dredge, dive, or get oysters off the rocks, without the necessity of begging the oyster monopolists to give them employment.

32. The oyster waters in the Colony being thus offered to the public on such liberal terms, there would not possibly be any excuse for oyster thieves, or the receivers of stolen oysters. Cattle and sheep are protected, and oysters ought to be equally secured, in order that full-grown oysters may become as plentiful and cheap as beef or mutton. There are reasons why oysters should be *specially* protected, because there is more danger of oysters being stolen than either cattle or sheep. Oysters cannot be branded or identified with the same facility as sheep or cattle, and in shallow water (where they fatten the best) they are more exposed, and easily picked up by the idle who would rather steal than work. There are few persons who would invest capital in any industry, unless they have a tolerable assurance that it will be protected, and those persons who buy oyster spat to grow and fatten in their ponds, trenches (or claires) have to wait for three or four years before they can have any returns.

33. We suggest for the protection of the public, as well as private property, that no dredging on the oyster rivers should be allowed between sunset and sunrise; that no oysters should be conveyed from one place to another without a permit or pass, signed by the owner or his agent; that no oysters should be carried by water, unless the person in charge has a permit, or they appear on his manifest; a breach of any of these provisions should subject the offender to a penalty. We also recommend that all licensed oystermen should show their licenses whenever they are required to do so by an Oyster Inspector, or by the Police, or any Custom House Officer.

34. In order effectually to put a stop to the receiving of stolen oysters, we recommend that all dealers in oysters should be required to take out a license, and to keep an entry of all the oysters they purchase.

35. In all cases of conviction the Magistrates should have power to cancel the licenses, in addition to any penalties which may be imposed. And a moiety of all such penalties should go to the informer.

36. We have carefully revised and amended a Bill drawn by Mr. G. Milner Stephen, and think that if it become law it will work beneficially. Although the legislation upon oyster fisheries in the United Kingdom extends over some twenty-five Acts of Parliament, especially in later years as the knowledge of the subject has increased, we have felt it our duty to make the Bill as concise as possible, and we trust that that which accompanies this report embraces all the points necessary in this colony.

37. We also recommend the Government at once to appoint an efficient staff of Inspectors, for the supervision and preservation of our oyster fisheries, as their services are urgently required.

38. We think also that it would be advisable forthwith to issue amended regulations for the guidance of the present so-called lessees without recognising the legality of their position should their so-called leases not be immediately cancelled; and it should be carefully provided in these regulations that all spat, brood, and ware, when dredged, should be at once returned to the bed from which they are taken, and only matured oysters sold therefrom.

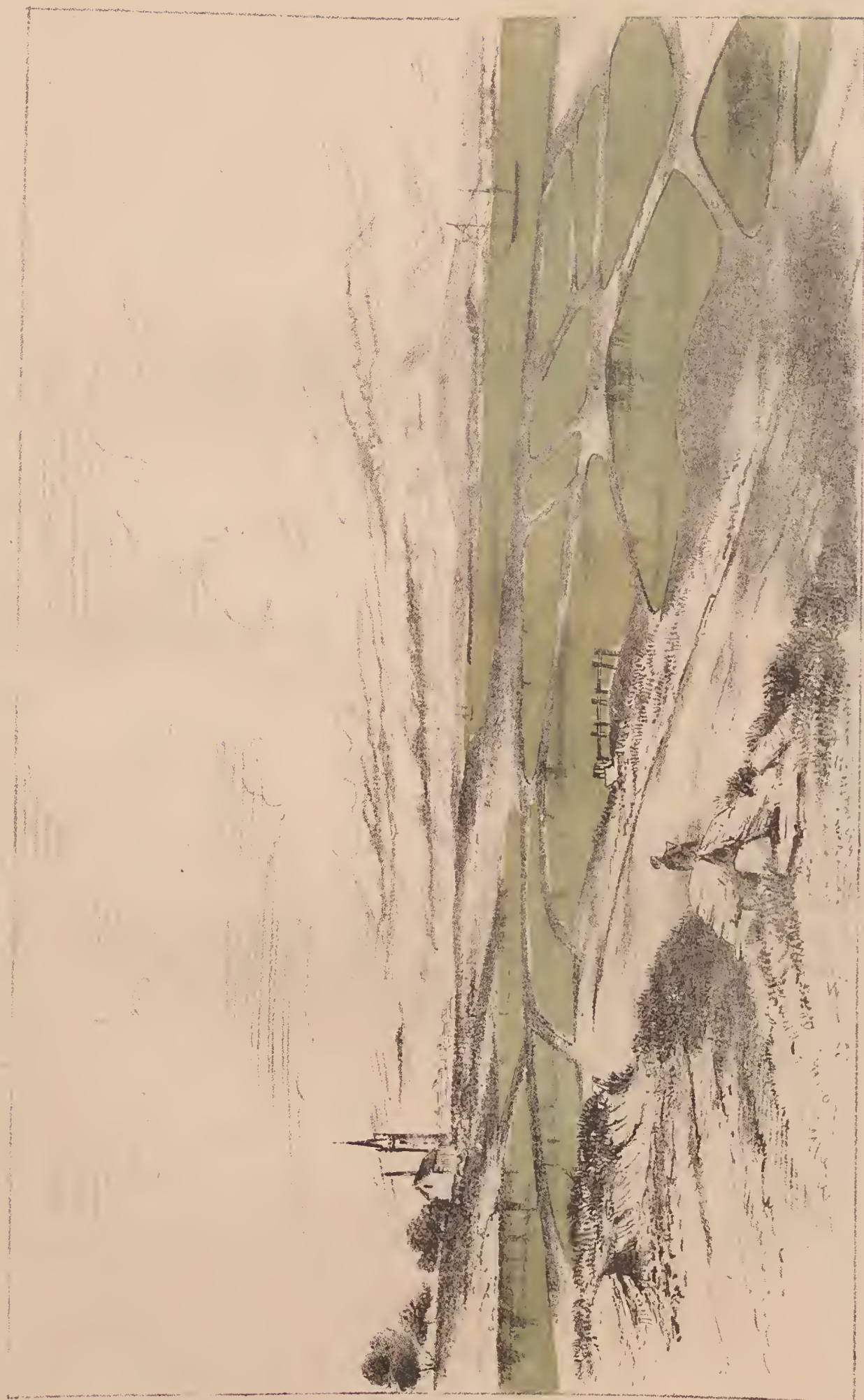
39. In conclusion, we would draw your Excellency's attention to the evidence taken by this Commission and the reports of Messrs. Langham and Black appended hereto, which contain valuable information. We have also thought it advisable to append lithographs to illustrate some of the artificial processes for collecting and cultivating oysters in France.

40. We have endeavoured to make our Report as complete and brief as possible, but we have found that we could not do justice to this most important subject in fewer words.

Certified under our hands, at Sydney, this third day of May, 1877.

THOMAS HOLT, PRESIDENT.
J. BOWIE WILSON.
JAMES S. FARNELL.

[Lithographs—four leaves.]

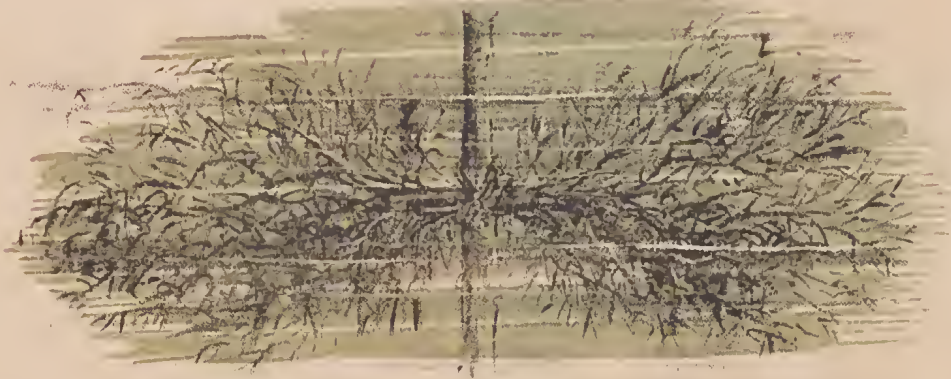


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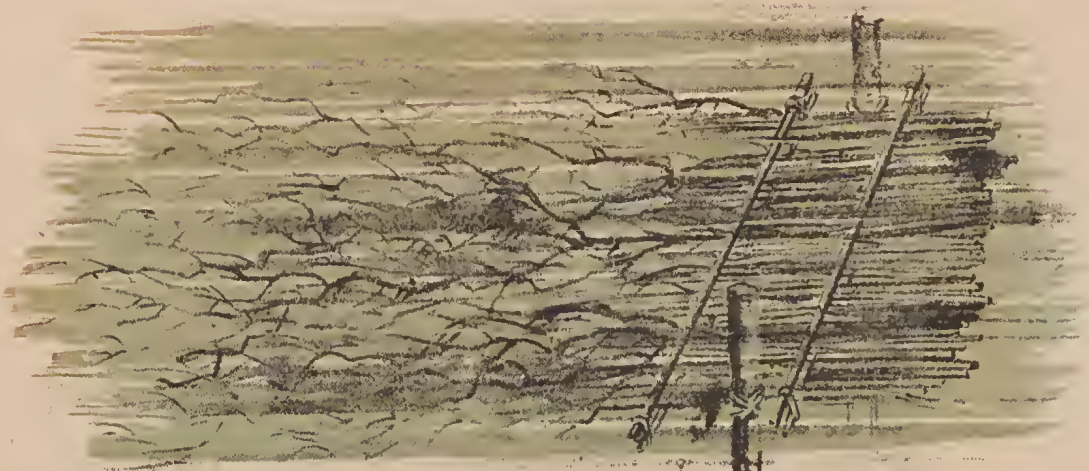
Clares at Marennes, France

*Illustrations of Oyster Culture copied from the report of the Irish Commission of enquiry
into the method of Oyster Culture in the United Kingdom and France.*



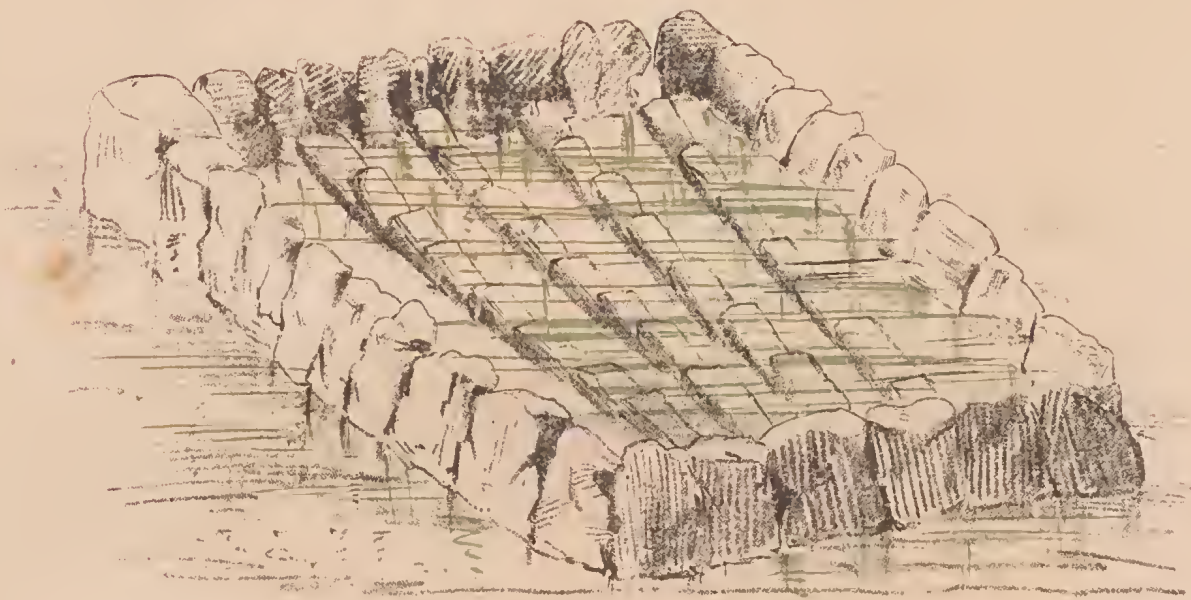


Fascine



Collectors





Arrangement of Collectors in a part at Ile de Re



Fascine at St Brieuc with "spat" attached



40^o VICTORIÆ, 1877.

A BILL

To consolidate and amend the Laws for regulating Oyster Fisheries.

WHEREAS it is expedient to amend the laws for regulating Preamble.
oyster-fisheries and encouraging the formation of oyster-beds
Be it therefore enacted by the Queen's Most Excellent Majesty by and
with the advice and consent of the Legislative Council and Legislative
Assembly of New South Wales in Parliament assembled and by authority
of the same as follows:—

1. The Act thirty-first Victoria number twenty intituled "*An* 31 Vic. No. 20
Act to regulate Oyster Fisheries and to encourage the formation of repealed.
Oyster-beds" shall be and the same is hereby repealed.

Interpretation of Terms.

2. In the construction of this Act the following words within Interpretation of
inverted commas shall have the meanings assigned to them respec- terms.
tively unless inconsistent with the context (that is to say):—

"Governor"—The Governor with the advice of the Executive Council.

"Oyster"—Every variety of edible oyster and the spat brood and ware of oyster.

23—c

"Collectors"—

“Collectors”—Any mineral or organic substance (whether stones slates tiles cultch shells wood hurdles or fascines of twigs) used for collecting the spawn or spat of oysters.

“Dredging”—Any mode of fishing for or taking oysters whether by means of a dredge or otherwise.

“Sea-shore”—The shore and bed of the sea or of an estuary or tidal river above or below or partly above and partly below low-water-mark or within three miles off the coast.

“Private Owner”—The owner of any oyster-bed situated on his property.

“Minister”—The Secretary for Lands.

“Inspector”—The Controller or any Inspector of Oyster Fisheries or other Officer appointed by the Governor to carry into effect the provisions of this Act.

“Fishery”—Any oyster-bearing waters.

“Private Fishery”—Any oyster-bed held by a private owner in fee under a Crown grant or by lease from the Crown.

“Lessee”—A tenant of the Crown.

“Natural Oyster-beds”—All natural oyster-banks or beds or deposits of oysters whether found on mud sand clay rocks or other mineral or organic substances within *three* miles of the coast or within the headlands of any harbour bay estuary or tidal river (not being the property of any private owner) on which banks or deposits of oysters are found and which shall have been propagated without manual labour shall be deemed “natural oyster-beds.”

“Artificial Oyster-beds”—Any ground under lease whether enclosed or otherwise where oysters are introduced or laid down for cultivation.

Governor may grant leases of ground for making artificial oyster-beds.

29 and 30 Vic. c. 97 s. 4.

3. The Governor may demise or lease for any term not exceeding *fifty* years or may renew the same at its expiration subject to such conditions and limitations as the Governor shall approve any land belonging to the Crown subject to be covered by water at high tide or within two feet of the level of high-water-mark and not exceeding five acres to any person for the purpose of forming or planting artificial oyster-beds subject to the provisions of this Act and of any regulations made under its authority at a yearly rental of *five shillings* per acre for the first *four* years and *twenty shillings* per acre for the remainder of the lease.

Not lawful to demise natural oyster-beds.

4. It shall not be lawful for any demise to be made of any natural oyster-bed but the same may be dredged by persons duly licensed in that behalf subject to the provisions of this Act and of the regulations made under its authority.

Leases to be in writing &c.

29 and 30 Vic. c. 97 s. 5.

5. Every lease granted under the authority of this Act shall be in writing or partly in print and partly in writing and be signed by the Governor and shall by reference to a map plan or tracing annexed thereto or other sufficient description define the position and limits thereby demised and shall contain all necessary covenants for the due observance of the several provisions of this Act by the lessee.

Lessees to mark out their limits upon the ground.

29 and 30 Vic. c. 85 s. 19.

Governor may cancel any lease of oyster-beds &c.

29 and 30 Vic. c. 85 s. 22.

29 and 30 Vic. c. 97 s. 10.

6. Every lessee shall within the time prescribed by the Regulations after the granting of his lease mark out with stakes or otherwise the boundaries of his leasehold in the manner directed thereby And whenever any demise shall have been granted of any artificial oyster-bed if it shall be made to appear to the Minister at any time that the lessee or his assigns shall have broken any of the conditions of the lease or is not properly cultivating the oyster-ground within the limits of such lease or has not properly defined the boundaries thereof then and in such case it shall be lawful for the Governor to cancel such lease.

7. For the purposes of the provisions contained in this Act the Minister may from time to time with respect to any lease thereby demised make such inquiries and examinations by an Inspector of Fisheries or otherwise and may require from the lessee thereof such information as the Minister may think necessary or proper And the said lessee shall afford all facilities for such inquiries and give true information accordingly or such lease may forthwith be cancelled.

Minister may direct inquiries to be made.
29 and 30 Vic. c. 97 s. 10.

8. All oysters being in or on a demised artificial oyster-bed within the limits of the demise or of any oyster-bed belonging to a private owner and which is sufficiently marked or known as such shall be the absolute property of the lessee or private owner and in all Courts of Law and Equity and elsewhere and for all purposes civil and criminal or other shall be deemed to be in the actual possession of the lessee or private owner.

Property in oysters on oyster-beds.
29 and 30 Vic. c. 85 s. 16.

9. Any person stealing any oysters from any oyster-bed being the exclusive property of any other person and sufficiently marked out as such shall be deemed guilty of larceny and being convicted thereof shall be punished accordingly.

Stealing oysters &c. deemed larceny.
24 and 25 Vic. c. 96 s. 26.

10. Whenever any oysters shall have been removed by any person from an oyster-bed which has been demised under the authority of this Act or belongs to a private owner and not either sold in an open fish market or disposed of by or under the authority of the lessee or private owner shall be the absolute property of the lessee or private owner and in all Courts of Law and Equity and elsewhere and for all purposes civil and criminal or otherwise the absolute right to the possession thereof shall be deemed to be in the lessee or private owner.

Property in oysters unlawfully removed from oyster-beds.
30 Vic. c. 18 s. 4.

11. It shall not be lawful to discharge any sawdust sugar-cane refuse or other rubbish or any blood or offal or any other filth into any oyster-bearing waters or into any watercourse whether dry or not leading into the same or to discharge the same elsewhere in such manner that it is carried or is likely to be carried into such oyster-bearing waters And if any person shall do any act in contravention of this section or shall otherwise suffer or permit any of the above named matters to be so discharged into any such waters he shall be liable to a penalty not exceeding *twenty* pounds nor less than *two* pounds and shall also be liable in addition to make full compensation to the lessee of any oyster-bed for any damage sustained by him by reason of any such unlawful act which compensation may be recovered from the person offending in any Court of competent jurisdiction.

Sawdust and other mill refuse &c. not to be discharged.
29 and 30 Vic. c. 89 s. 63.

12. Any person disturbing or injuring in any manner any oyster-bed or the oysters brood or spat thereupon or any oyster fishery shall on summary conviction be liable to a penalty not exceeding *ten* pounds and not less than *one* pound for the first offence and not exceeding *twenty* pounds and not less than *five* pounds for the second offence and to imprisonment for *three* months for the third and every subsequent offence And every person so offending shall in every case also be liable to make full compensation to the lessee for all damage sustained by him by reason of such unlawful act and in default of payment the same may be recovered in any Court of competent jurisdiction whether the person so offending has or not been prosecuted for or convicted of such offence.

13. Whosoever shall dredge for oysters between sunset and sunrise or shall gather or burn living oysters (whether he shall be or not the lessee of any oyster-bed) for the purpose of converting the shells into lime (and the possession of any living oysters together with any dead oyster-shells in the same boat or bags or heap shall be *prima facie* evidence of such purpose) shall on conviction thereof be liable to a penalty not exceeding *fifty* pounds and not less than *ten* pounds and if such person be a lessee of any oyster-bed the demise of the

Burning live oysters for lime prohibited.

the same may on the recommendation of the convicting Justices be cancelled by the Governor.

Oysters to be culled
on the fishing-ground.

Rep. Ir. Comm. 1870.

14. Every person whilst engaged in dredging oysters from any natural oyster-bed shall immediately after making each drag or haul throw back into the water whilst on the fishing ground every oyster of less dimensions than *two and a half* inches at the greatest diameter thereof as well as all gravel and fragments of shells as shall be raised while engaged in such fishing. And every person offending against the provisions of this section shall be liable to a penalty not exceeding *twenty* pounds and not less than *one* pound and the whole of the oysters found in his possession shall be forfeited. And the possession by such person of any unsizable oysters shall be *prima facie* evidence that he had unlawfully taken them. Provided always that if the persons so offending shall prove to the satisfaction of the convicting Justices that any such oysters of less than the above standard dimensions are required as oyster brood for the purpose of stocking or replenishing any specified natural or artificial oyster-bed the said Justices may thereupon abstain from imposing any penalty.

Persons on pleasure
excursions exempted
from operation of
this Act.

15. None of the provisions of this Act applicable to oyster-fishing shall be held to apply to any persons taking oysters when engaged in pic-nic parties or otherwise *bona fide* in the pursuit of pleasure. Provided that oysters so taken by them shall not be sold or offered by them for sale or dealt with in any other manner than for actual consumption on the spot where the same may be gathered.

Boards may be appointed
for the consideration of
matters affecting oyster
fisheries.

7 & 8 Vic. c. 103 s. 4

16. The Governor may at any time nominate and appoint a Board to consider and report upon any subject connected with oyster fisheries for the information of the Minister and the benefit of those interested in the fisheries.

Oysters seized and
adjudged to be
forfeited may be
deposited in tidal
water.

17. Wherever any oysters shall be seized by reason of the same having been unlawfully dredged according to the provisions of this Act it shall be lawful for the Inspector of Fisheries or other person making such seizure to deposit the same temporarily in some convenient tidal water until the matter of such seizure shall have been determined by the Justices upon complaint made. And in case such oysters shall not be adjudged to be forfeited they shall be restored to the owner or person out of whose possession the same were taken. But upon the forfeiture of such oysters being adjudged by the convicting Justices as herein provided it shall be lawful for the Minister or Controller of Fisheries to direct the same to be removed to some oyster-bank appointed by the Governor and the same shall be finally disposed of in such manner as the Governor may direct.

Offenders may be
apprehended if they
refuse to tell their
names &c.

5 and 6 Vic. c. 106
s. 57.

18. If any person shall be found offending against any of the provisions of this Act it shall be lawful for an Inspector of Fisheries or other person duly authorized to enforce the provisions of this Act or for any lessee private owner or other person interested in the fishery in which such illegal act may be committed to require the person so offending to desist from such offence and also to tell his real christian name surname and place of abode. And in case of his refusal in either respect or his giving such a general description of his abode as shall be illusory for the purpose of discovery or shall wilfully continue such offence it shall be lawful for the Inspector of Fisheries or other person so authorized and so requiring as aforesaid and also for any person acting by his order and in his aid to apprehend such offender and to convey him or cause him to be conveyed as soon as conveniently may be before a Justice of the Peace to be dealt with according to law. Provided always that if the person apprehended cannot on account of the absence or distance of the residence of a Justice or other cause be brought before any Justice within *twenty-four* hours the person

Ibid.

person so apprehended shall not be detained any longer but shall be discharged. Provided that he may nevertheless be proceeded against by summons or warrant as if no such apprehension had taken place.

19. Every person dealing in oysters whether by wholesale or retail shall be required to take out an annual license for which he shall pay *one* pound and shall keep a book in which he shall enter the particulars of all purchases of oysters made by him which shall be open at all times to the inspection of an Inspector of Fisheries or any officer of police and any person selling oysters without such license or failing to keep such book as above directed shall on conviction thereof be liable to a penalty of not less than *five* pounds nor more than *ten* pounds.

Oyster dealers to take out licenses.

20. The Governor may from time to time as may become necessary make such rules orders and regulations as shall seem expedient for the more effectual government management protection and improvement of oyster fisheries and the registration of all boats and brands and the licensing of all persons engaged therein and from time to time repeal rescind or vary the same and substitute others in lieu thereof and may impose and prescribe any conditions and restrictions for the regulation of the said fisheries and the carrying and sale of oysters and the preservation of good order among the persons engaged in such occupations respectively. And it shall be lawful for the Governor by such rules orders and regulations to impose any penalty not exceeding *ten* pounds and also appoint the minimum penalty for the breach of any of such rules orders or regulations. And all such rules orders and regulations shall be published in the *Gazette* and shall be binding and conclusive on all persons as if the same had been contained in this Act. Provided always that a copy of all such rules orders and regulations shall be laid with all convenient dispatch before Parliament if then sitting or if not then in session within one month after the commencement of its then next session and shall be approved by both Houses of Parliament.

Governor may make regulations.

5 and 6 Vic. c. 106 s. 91.

21. Every person employed or engaged in dredging for oysters from natural oyster-beds shall take out a license to be current till the *thirty-first day of December* in every year which license shall be issued to him by the *Controller of Fisheries* or such other officer as the Governor may appoint in that behalf on the payment of *one* pound and shall have the name and address of the person to whom the same shall be issued written thereon in clear and legible characters and such license shall not be transferred to or be available for any other than the person named therein. And if any such person shall not have taken out such license or shall be unable to produce the same when its inspection is demanded by an Inspector of Fisheries police constable or other authorized person it shall be deemed *prima facie* evidence that such person has been unlawfully fishing for oysters. And it shall be sufficient in any proceedings for the recovery of the penalty so to charge and prove the offence.

Dredgers required to take out licenses.

13 and 14 Vic. c. 88 s. 12 and 32 and 33 Vic. c. 92 s. 17.

22. Such licenses shall during the term authorize the owner thereof to dredge for oysters at such times and places only as the Inspector may appoint and subject to any regulations that may be issued for the carrying out of this Act. Provided that the person so licensed shall also pay to the Government a fee or royalty of not less than *two shillings and sixpence* for each bag of three bushels of oysters dredged and such sums shall be collected as and when provided by the Regulations. Provided also that all oysters dredged for sale shall be sold by the dredger in the shell. And any person dredging for oysters without such license or in contravention of the provisions of this section shall on conviction be liable to a penalty of not less than *five* pounds or more than *ten* pounds and to the forfeiture of all oysters then dredged by him.

Governor may grant licenses.

Governor may close up any fishery over-worked.

7 and 8 Vic. c. 108 s. 5.

Governor may appoint officers.

Oyster bags to be branded.

Oysters to be entered in manifest.

Oyster carriers to obtain permit.

All fishing boats and vessels to be registered and to be marked &c.

5 and 6 Vic. c. 106 s. 16.

23. Whenever any natural oyster-beds shall have been so severely dredged as to endanger their future productiveness as oyster-beds the Governor may by public notice published in the *Gazette* prohibit or close the fishery in the bay creek or other locality containing the same or any portion thereof (the position and limits of such oyster-bearing waters being defined in the said notice by a description of the natural features or by reference to a map or otherwise) for any period not exceeding *three* years and whosoever shall dredge for oysters from any oyster-bed situated in any such bay creek or other locality during the time the fishery shall be so prohibited or closed (unless he shall have the written authority of the Minister or an Inspector of Fisheries as herein provided) shall be liable on conviction thereof to the fines and forfeitures declared in and by the last preceding section Provided always that the Minister may authorize an inspector to clear the beds whilst closed from weeds mud or vermin And after being so cleared or worked to replenish if necessary with oysters or brood or with cultch stones shells or other proper material for the restoration of the bank or bottom.

24. The Governor may appoint a Controller and Inspectors of Oyster Fisheries whose duty shall be to carry out the provisions of this Act and any regulations that may be issued thereunder and also do all in their power to improve the natural oyster-beds by planting collectors and otherwise improving the productiveness of the natural beds.

25. Whenever oysters are carried either by land or water they shall be placed in bags and each bag shall be branded with a legible brand at least three inches long which brand shall be registered in the manner and at the place to be named in the regulations and any oysters carried in contravention of the provisions of this section shall be forfeited and the person carrying them shall be liable on conviction to a penalty of not less than *two* pounds or more than *ten* pounds.

26. The master of any vessel carrying oysters shall enter them in the manifest stating the quantity the name of the shipper and also the name of the person to whom they are consigned And any oysters carried in any vessels and not so entered in the manifest may be seized by an Inspector Custom House officer or officer of police and confiscated and the master of the vessel shall be liable on conviction to a penalty of not less than *two* pounds and not more than *ten* pounds.

27. Any person carrying oysters by land shall obtain a permit from the owner of the oysters stating the quantity by whom owned to whom consigned and also the locality from which they have been taken or dredged which permit shall be produced if demanded by any inspector of fisheries or officer of police and on the carrier failing to produce such permit the oysters shall be seized and forfeited and the person in whose possession the oysters are found shall be liable on conviction to a penalty of not less than *two* pounds or more than *ten* pounds Provided any person signing such permit other than the owner of the oysters or his agent shall on conviction be liable to a penalty of not less than *two* pounds or more than *ten* pounds.

28. A registry of all vessels and boats employed in dredging for oysters shall be kept at the nearest Custom House if any or otherwise at the nearest police office in the district to which every such vessel or boat belongs together with the name of the owner thereof and the port or place to which it may belong and stating the number of men usually employed therein And every such owner is hereby required to have his vessel or boat with his name so registered accordingly And every such owner shall thereupon be furnished by the officer so registering with a certificate thereof signed by him for which the owner shall pay a fee of *two shillings and six pence* and such certificate

certificate shall contain the mark number or letter assigned to such vessel or boat and shall be conclusive evidence of such registration. And the mark number or letter which shall be assigned to every such vessel or boat by the registering officer together with the name thereof of the owner or some owner if more than one and of the port or place to which she belongs shall be painted on the stern of such vessel and such mark number or letter shall also be painted on the bow or quarter and on the sails in such manner and in figures of such dimensions as the Minister may direct. And if any vessel or boat shall be used for dredging at any time after the expiration of *one* month after the passing of this Act without having been so registered or being so marked or whose sails are not marked according to the provisions of this section the owner master or person in charge of the same shall for every such offence be liable to a penalty not exceeding *ten* pounds and not less than *one* pound. Provided always that when any vessel or boat shall not be permanently engaged in dredging the mark number or letter may be temporarily attached to the sails bows or quarters thereof in such manner and for such time as the Minister shall authorize.

Penalty for using
vessels not registered.

29. There shall be annually laid before both Houses of Parliament a report by the Minister respecting his proceedings under this Act during the preceding year.

Annual report to be laid
before Parliament.
20 and 30 Vic. c. 85 c. 27.

30. All complaints may be heard and all penalties or forfeitures imposed and declared by this Act or of any regulation made under its authority may be enforced in a summary way before any one or more Justices in the manner provided by the Act of the Imperial Parliament eleventh and twelfth Victoria chapter forty-three as adopted by the Act fourteenth Victoria number forty-three or any Act amending the same and out of every penalty imposed under the authority of this Act the convicting Justices shall award a moiety thereof to be paid to the person on whose information the prosecution in the case was instituted.

Complaints to be
heard in a summary
way &c.

31. Where no penalty is specifically provided for any breach of the provisions of this Act or of any regulations made under its authority the person offending shall be liable to a penalty not exceeding *five* pounds and not less than *one* pound.

Penalties for offences
not specifically
provided for.

32. If any penalty imposed under the authority of this Act or of any regulations made thereunder shall not be paid forthwith or within the time appointed by the convicting Justices the person offending shall be adjudged to be imprisoned for any term not exceeding *three* months unless such penalty be sooner paid.

If penalty not paid
the offender may be
imprisoned.

33. All complaints or other legal proceedings taken for the breach of any provisions of this Act or of any regulations made under its authority may be laid and taken by any person against any person charged with any breach of this Act or the said regulations.

All proceedings may
be taken by any
person.

34. Any summons against any person offending against any provisions of this Act or any regulations made thereunder may be served either personally or by leaving the same at his last known place of abode with any inmate of the same. And in case the person so summoned shall not appear before the Justices in Petty Sessions according to the exigency of the said summons it shall be lawful for any Justice upon proof of the service of such summons to issue a warrant for the apprehension of the person so summoned and to proceed thereon according to the provisions of the Act fourteenth Victoria number forty-three and the English statutes thereby adopted.

Warrant may be
issued against party
summoned and not
appearing.

35. The evidence of informers owners or occupiers of oyster-beds or of other persons interested in the oyster fishery shall be receivable in all Courts upon any legal proceeding taken against any offender against any of the provisions of this Act notwithstanding that the witness shall be entitled in case of the conviction of the offender to receive a portion of the penalty awarded. And it shall be lawful

Evidence of informers
&c. to be admissible.

5 and 6 Vic. c. 106
s. 103.

lawful for the Justices hearing the case to convict the offender upon such evidence notwithstanding that the witness shall not be corroborated by any other testimony.

The lease or certified copy to be evidence of the demise.

29 and 30 Vic. c. 97 s. 12.

Larceny from contiguous oyster-beds.
30 Vic. c. 18 s. 6.

Justices may grant a warrant to enter suspected places.
5 and 6 Vic. c. 106 s. 85.

Police to aid and assist Inspectors.

5 and 6 Vic. c. 106 s. 89.

Appeal allowed to Quarter Sessions.

Short title.

36. The production of the lease signed by the Governor or a copy thereof certified as such by the Controller of Oyster Fisheries shall in all Courts of Justice be conclusive evidence in all civil and criminal proceedings that such demise was duly granted by the Governor of the oyster-bed therein described and defined.

37. Whenever a person shall be charged with larceny of oysters from any oyster-bed which may be contiguous to another or others it shall be sufficient in alleging and proving the place from which such oysters were stolen to allege and prove that such oysters were stolen from one or other of such contiguous beds and that the same belonged to and were in the lawful possession of one or other of the lessees or private owners thereof.

38. Any Justice of the Peace upon an information on oath that there is probable cause to suspect any breach of the provisions of this Act to have been committed anywhere by warrant under his hand and seal to authorize and empower by name any Inspector of Oyster Fisheries or any other officer appointed by the Governor under this Act to enter any dwelling-house or premises for the purpose of detecting such offence.

39. All police constables and others if called upon to aid and assist any Inspector of Oyster Fisheries or other officer in the execution of any of the powers or authority vested in him by this Act are hereby authorized and required to aid and assist such Inspector or officer in the lawful exercise of the powers and authorities so given to him for enforcing the provisions of this Act.

40. Any person feeling himself aggrieved by any conviction or penalty or forfeiture made under the authority of this Act where the penalty or sum exceeds *five pounds* may appeal against the same to the next Court of Quarter Sessions holden in the district where the subject matter thereof arose unless such Quarter Sessions shall be held within fourteen days from the date of such conviction or judgment and in that case to the Court of Quarter Sessions then next following. And such Court shall have power to hear and determine the matter in a summary way and shall have and exercise all other powers vested in them by the third section of the Act fifth William the Fourth number twenty-two and the decision of such Court shall be final and conclusive in respect to the subject matter of such appeal. Provided always that the person so appealing shall have given written notice seven days at the least before the hearing of such appeal of his intention to appeal and stating the grounds thereof to any one of the convicting Justices and to the person who prosecuted the matter before the Justices in Petty Sessions and provided also that the person convicted (in case a penalty shall have been awarded against him) shall pay into the hands of the convicting Justices the full amount thereof together with the costs awarded within twenty-four hours next after conviction and also enter into a bond with two sureties approved by such Justices conditioned to prosecute such appeal with effect and to abide the event of such appeal and to pay the full amount of all such costs as may on such appeal be awarded against him.

41. This Act may be cited for all purposes as the "Oyster Act of 1877."

OYSTER CULTURE COMMISSION.

MINUTES OF EVIDENCE.

MONDAY, 6 NOVEMBER, 1876.

Present:—

HON. T. HOLT, | HON. J. B. WILSON.
THE HON. THOMAS HOLT, M.L.C., IN THE CHAIR.

Mr. Frederick J. Gibbins called in and examined:—

1. *Chairman.*] You are aware that this Commission has been appointed to inquire into the best mode of cultivating the oyster, and utilizing and maintaining the natural beds, in order to recommend to the Government the necessary legislation to secure those objects. I believe you have had a great deal of experience in oyster culture? Yes.
2. You have also been dealing in oysters as well as engaged in cultivating them? I have.
3. You have had experience not only in growing and fattening, but also in breeding them? Yes.
4. At what age do you consider oysters to be marketable—that is to say, fit for food? About four years.
5. What size would an oyster be at that age? That would depend greatly upon the river it came from.
6. Yes, of course; but you are aware, perhaps, that in England a gauge is employed in order to test their growth—all oysters that are sold are tested by a ring having a diameter of $2\frac{1}{2}$ inches, and if they can be passed through that ring they are not considered marketable. At what size do you think oysters should be considered marketable in this country? Well, as I have just stated, it depends greatly upon the river they are taken from. In the Newcastle river, where the beds are a mile apart, there is a difference of fully two inches in the size. In the bay they never grow to any size—they are always cuppy, but in the channel round Mosquito Island they are larger, and not so cuppy.
7. What are their respective sizes—those in the bay, and those in the channel? In the bay they are about 3 inches, and in the channel about 5 inches.
8. As large as 5 inches? Yes, when they are full-sized.
9. Do you think it would be desirable to have a gauge in this country to test the size of the oysters, so as to prevent such a number of small ones being sold? I think not.
10. Are you not aware that very small oysters are sold in the shops? Yes, there are a great many; the smallest oysters are those which are brought from off the Parramatta River, Port Hacking, and some other places; those are the smallest that are brought to market.
11. Do you think it desirable that these very small oysters should be sold for food? No.
12. What remedy do you suggest, as you appear to see objections to the use of the ring employed in England? I hardly know what to propose.
13. If the small oysters are 3 inches in size, and the largest 5 inches, would it not be safe to adopt a ring or gauge of $2\frac{1}{2}$ inches? Yes, it would be safe, but I don't think it would be advisable.
14. You think that no oysters that would pass through a $2\frac{1}{2}$ gauge ought to be sold? Yes;* but the oysters I am speaking of would be those taken from their natural beds; those you mean are of course very small and thin.
15. *Hon. J. B. Wilson.*] That would be an argument in favour of the ring, would it not? Yes.
16. *Chairman.*] But you have already stated that you think it is not desirable to allow these very small oysters to be used? Yes.
17. And these are chiefly rock oysters, which adhere to the rocks very high up, and are therefore not so much exposed to the water? Yes.
18. These oysters, if removed to good ground, would grow and become larger and fit for food, would they not? No, sir.
19. Have you ever made the experiment? I have.
20. Did you find they would not grow on rich ground? Yes; I have laid down plenty that came from ground of that sort, and I have found that they had come to their full growth before they were removed, and have not grown since they were moved.
21. Of course if they had come to their full growth they could not grow any more, but did they not fatten? Yes, but they did not become fit for market during that time.
22. Would they when full-grown go through a $2\frac{1}{2}$ -inch ring—you spoke of oysters being from 3 inches to 5 inches in size—would these oysters, fattened on your rich ground, go through a $2\frac{1}{2}$ -inch gauge? They would sir, that is to say the oysters that grow high up on the rocks. When I first commenced bedding oysters, especially in one place on the Hawkesbury River, it was these oysters chiefly that I got, and they are still lying in the bed. The only advantage I derived from them was that they spawned, and I got the spawn.

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NOTE (on revision):—

Sir,

In giving evidence before the Commission of Inquiry into Oyster Culture, on Monday, 6th November, I made an error in stating the size of the ring should be $2\frac{1}{2}$ inches in diameter; since then I have had a ring made, and find that, with very few exceptions, the whole of the oysters taken from my beds will pass through the ring; and I may say my oysters are no exception. I consider a ring $1\frac{1}{2}$ inch would be a fair size for marketable oysters. And I may also mention that in the size I gave I should have stated the oysters were from 3 to 5 inches in length. I have the ring mentioned above by me, and am quite willing to show the same, with a sample of oysters, to prove my statement.

Sydney, 15 November, 1876.

Yours respectfully,
FREDK. J. GIBBINS.

To Lindsay G. Thompson, Esq.,
Secretary to the Commission on Oyster Culture.

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23. *Hon. J. B. Wilson.*] Were they full-grown—that is to say, four years old—when you got them? Yes.
24. *Chairman.*] Were they growing high up on the rocks? Yes.
25. And when put down on the ground they fattened, but did not grow? Yes.
26. Is not that contrary to all experience—Is it not the case that women and children knock them off the rocks and send them away to persons who fatten them for eating? Yes, I do the same; but I understood you to refer to the oysters which grow high up on the rocks.
27. I do not mean those only which grow on the highest rocks—what I wish to know is whether oysters growing on the rocks will not grow larger if placed in good ground. I do not mean the very small oysters such as are called Tom Thumb oysters, stunted in their growth. Oysters sticking to rocks, if moved would not they fatten? Oh yes; I thought you referred to the stunted oysters.
28. Have you formed any opinion respecting the spawning of oysters—do they spawn all the year round? Yes, every month in the year.
29. Do they spawn during some months more than in others? Yes.
30. Can you give us any idea of the percentage of the oysters which spawn at one time in one oyster bed? No, I cannot.
31. There have been many theories on the subject. Some say that not more than 2 per cent. spawn, others say 10 per cent. I have formed no idea.
32. But you are aware that oysters have a large number of spat in the water? Yes. I have cut out a number of paragraphs from papers at different times, but I find there is a great difference in the quantities given.
33. Do you think the percentage of breeding oysters in a bed is greater than the percentage of breeding sheep or cows on a cattle station? Yes, sir.
34. What data have you for forming that opinion? The only ground I have for thinking so is from what I have noticed in one place, especially on the Hawkesbury River, where we threw over some ballast stones—stones with nothing on them—in order to see the set of the spawn on them.
35. And from the observations you then made you came to the conclusion that the percentage is greater than that of breeding sheep or cows? I think so, but I have had no means of proving it with any accuracy.
36. Are you aware that an oyster is said to produce a minimum number of eight or ten hundred thousand spat, and some naturalists are of opinion that the number is six or eight millions? I have heard so. The breeding depends greatly upon the state of the water while they are spawning.
37. Is not the opening of the oyster the best criterion—Have you even seen more than one or two out of a hundred that were spawning showing what are termed the white or black sickness, which are different stages of spawning? Yes, I think I have.
38. What proportion have you seen? Well, of course I have never opened such a quantity at a time; but when I have been on the Hawkesbury River, I have found nearly every oyster spawning; when they were opened the spawn would run away from them. On one occasion, on the Hawkesbury River, almost every oyster was spawning—as soon as you touched it the milk would run away from it.
39. Then do you think it would be desirable to have a close season for oysters? No, sir.
40. *Hon. J. B. Wilson.*] Is there not a greater percentage of spawning in some months of the year than in others? Yes, about Christmas time.
41. Although the oysters spawn all the year round? Yes.
42. Supposing you took the month of June, would you find a large proportion of oysters in a spawning state at that time? Yes, in some rivers. In the Clarence and Clyde Rivers the oysters are at their best all the winter.
43. *Chairman.*] Do they vary so much? They vary very much; the oysters from the Clarence River are really splendid all the winter.
44. But if there is such a very large proportion of oysters spawning at one time—nearly every one as you say—would it be undesirable to close that portion of the river for a time only? I should not think it desirable to have any close season here at all.
45. Why? On account of the quantity of oysters we have.
46. But are they wholesome as food when they are in a state of sickness? They are what we call watery then; I do not consider them fit for food.
47. *Hon. J. B. Wilson.*] You say that you do not consider it advisable to have a close season, on account of the large quantity of oysters we have—Do you think we have anything like the quantity we ought to have? Well, as far as I am concerned I think I may say that I have three times the quantity I had when I first took charge of the rivers.
48. But we are talking of the spawning, and you give, as a reason that there should be no close season, the quantity of oysters? Well, if there is a market for them in the winter I don't see any occasion for a close season.
49. *Chairman.*] You mentioned Christmas as the time that they are principally spawning; that month should certainly be closed? That is the time they are really fat, for of course they do not spawn unless they are fat. On the Hawkesbury River I can commence with January and finish with January, and give you really good, fat, marketable oysters all the year round.
50. From one river? From three rivers; when I cannot get them from one bed I can from the other.
51. Which are the three rivers? Newcastle, Broken Bay, and the Clyde River.
52. If you cannot get them from one place you are certain to get them from another—if they are not spawning in one river they are sure to be in the other? Yes.
53. Have you ever made any attempt to collect the spat by means of wood or stone placed in the rivers? No; in fact I am so situated, on the Hawkesbury River especially, that I have no occasion for any artificial means of collecting it.
54. There is such an enormous quantity of spat sticking on to the rocks? Yes.
55. And you employ persons to knock it off the rocks, and then you plant it? Yes.
56. Are the banks of the Hawkesbury River covered with spat the same as those of the Parramatta and Clarence Rivers? Yes, only thicker; from the time you enter it, just up Long Reach going up the river, you may say there are 100 miles with nothing but rocks with the spat sticking to them.
57. Which would be worth many millions sterling in England, where the great difficulty is in securing the spat? It would, but are their oysters the same as ours?
58. No doubt of it? I am given to understand that they are only mud oysters.
59. Have you sufficient fattening ground for the whole of the oysters on the rocks? Yes.

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60. If the demand were sufficient, then you would be able to plant all the oysters that are on the rocks for 100 miles? Not the whole of the distance, because there is a good deal of it where we could not put oysters on.
61. I mean suitable ground, free from any objections. Where you chiefly plant oysters, I presume, is in sheltered spots where there is plenty of mud? As little mud as possible—not sufficient to bury them.
62. But you would not expect to get fat oysters off the bare rock? No, but I always endeavour to get a gravelly bottom.
63. So as to prevent them from sinking. Would not a bed of oyster-shells be the best of all? Yes, wherever we can get an old bed they always do very well.
64. With respect to the oysters on the rocks, not only in Sydney but in other parts of the Colony, can you suggest any mode by which the Government could utilize them—Do you think it would be desirable to license persons who, with their wives and children, might be able to make a very good living by knocking them off the rocks and selling them to others who would fatten them? I do not think so; it would not be very easy to get persons to go into the business. The plan I have endeavoured to carry out is this: I have told them to take a particular spot and plant the oysters so as to form a bed, and I have offered to buy them when they had grown to a marketable size, but no one would go into it.
65. Would not it be too long for working men, who expect to get paid their wages at once, to wait? The people to whom I made the offer were men who were working for me and getting paid for their work.
66. But still it would be for wages only that they would care to work—they would like to be paid at once. Perhaps if you were to put it to them in another form, and offer to pay them so much a bag for all the oysters they knocked off they would be glad of the work? Then it would require a host of people to watch them.
67. But do you consider it desirable that the Government should continue to lease those large areas for oysters? I think the term of lease is too short.
68. *Hon. J. B. Wilson.*] The Chairman is referring to the extent of ground leased. Is not the area too large to be comprised in one block? I will answer that question in this way: We have the same difficulty to contend with here that they have in England, where they cannot prevent the practice of going to each other's ground and stealing the oysters. Even with all the care I take I get my oysters stolen, though I have men continually working and keeping a look-out, and I have an overseer at each place.
69. No wonder, the area comprised in your lease being so very extensive; it is scarcely possible for one overseer to supervise 100 miles? Of course when I say 100 miles that is the measurement along the shore taking each turning.
70. What I wish to know is whether you think it should be the policy of the Government, in the interest of the public, to continue to lease these large areas, or whether it would not be better for all parties to divide them and to lease smaller blocks? I do not think so.
71. You think it would be better to continue to lease these large areas for short terms rather than smaller areas for longer terms? No, I think the same areas should be leased for longer terms. I can only say that for my own part I would not take any lease a portion of which was sub-let. It is very difficult to get honest men on a river. Even in Sydney there are plenty of people who will buy oysters that are stolen from me who am a legitimate dealer.
72. With regard to securing the ownership of oysters, you are aware that in the case of cattle and sheep the Government take precautions to prevent persons from slaughtering or selling without a license, and neither cattle nor sheep can be driven from one place to another without a pass from the owner. Also with respect to the cutting of timber, licenses are required, and for other industries. Now supposing that the Government—I am merely putting the question as one of public policy, the object of the Government in appointing this Commission being to obtain advice as to the best course to pursue in the future, when the present leases, which I believe have about eight years to run, have expired—were to throw these large blocks open to tender in subdivisions of smaller areas, subject to such precautions as might be found necessary to prevent stealing? Of course I can only speak for myself, and I can only say that I should not like to tender for the lease of any river portions of which were sublet.
73. Do you think it is not possible for the Government to adopt such precautions as would prevent oyster-stealing—you seem to be afraid that other persons would steal the oysters from your rocks; that is your idea, is it not? Yes.
74. But still you have a great deal more than you can make use of? I am in hopes of having more; I have not at present.
75. Why, to knock off all the oysters annually that stick to your rocks you would require many hundred men? Yes.
76. So that your area is larger than one person could manage unless he went into it very largely. Therefore, supposing the Government should take precautions to prevent stealing, would it not be desirable to reduce the size of these blocks? No, sir, I think not.
77. Can you give the Commission any idea of the proportion of mud flats or fattening ground there is on the rivers which you lease from the Government? In Newcastle I may say there is none; in the Hawkesbury River, of course, there is a great deal.
78. That is where it is easy to get at the oysters—where they do not sink in the ground? Yes.
79. Are you aware that oysters do not breed in fattening grounds? No, sir, I am not.
80. That is the case in England, according to the evidence of some of the largest and most intelligent oyster merchants? It is not the case here.
81. One oyster merchant says that they never do, and were never known to breed on fattening ground? That makes me think there must be a difference in the oyster.
82. Can you form any idea where the oysters come from that stick to the rocks? I have no idea.
83. You have the same objection to the leasing of fattening grounds in smaller areas that you have to the rocks? Yes.
84. Have you any idea of the number of oysters that could be laid on one acre of ground? No, I could not tell you.
85. Would you consider a million too many? I have no idea of the number.
86. In England it is considered that about one million should be placed on an acre of ground for fattening? I could tell you by asking persons in my employ, but I have never calculated the number myself. We lay them down as singly as we can.
87. Have you ever considered the climate of Sydney in connection with the fattening of oysters—I mention

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mention Sydney as the mean temperature between the two extremes—have you considered that the climate of Sydney, which produces the orange and the vine, is a suitable one for the culture of the oyster? I have not.

88. Have you had any experience in oyster culture in Europe? No, only in this country.

89. Then you have had no opportunity of comparing one climate with another? No.

90. But you are aware that several years ago in England they did not get any spat? Yes.

91. That is never the case here, because we have no frost or snow? No.

92. Do you think, from what you have seen, that this country is particularly adapted to oyster culture—that they can be produced to any extent if there is a market for them? Yes. I think they are produced to too great an extent at present.

93. But if they come to be exported, either by freezing or some other process (the Americans, I believe, export them in tins), they would be a very valuable article of export. Don't you think in that case that they could be grown to supply almost any demand? No, not to such an extent as that.

94. Why not? Well, I have never heard of any of the oyster beds at Home being swept away by floods, such as we have here.

95. But in England the oyster has a great many enemies; they have the five-fingers, and the dog whelk, and many other enemies, and they are dredged from a great distance in order to get clear of these enemies? There are many places in this country where the beds are so swept with floods that the lessees are almost afraid to go into the business.

96. Do the floods affect the rock oysters as well as the others? All of them. In one creek—the Browra Creek—in the Hawkesbury, during the heavy flood of '67, every oyster in the creek was killed, and at that time there must have been some thousands of bags of them in it. I have been improving that place since, and it is now coming on again—that was eight years ago.

97. You find oysters fatten best in ground where there is some fresh water as well as salt, do you not? Yes, wherever the waters mingle, fresh and salt, the oysters get on better; when the water is entirely salt they have not the same flavour.

98. *Hon. J. B. Wilson.* With regard to the selling of oysters, do you not think some provision should be made under which every captain of a vessel should be held responsible for every oyster he carried to the Custom House, that they should be entered in his manifest, and that he should be able to show what beds they came from, and to whom they belonged? Supposing he did not put them on his manifest he would not be boarded by any officer, and he might put them into any boat he chose when going up the harbour.

99. But I am supposing there were proper officers to look after this traffic, and not that things should remain as they are, in a state of neglect. Don't you think a great deal might be done to prevent the stealing of oysters? No, because it is all done at night, and I do not think any officer could really look after it. For instance, when a vessel was coming up what could be easier than to send a telegram for a boat to meet her at any given place. Of course it would pay the parties to send a boat, as they would get the oysters at a low price.

100. There can be no doubt that a few oysters would be smuggled in that way, but with proper precaution a great deal of stealing might be prevented. Rum used to be smuggled in that way, but it has been put a stop to? The Parramatta River is the worst place for that; I have seen some very fine oysters sold in Sydney, and I have been told they came from Mr. Holt's place.

101. I am speaking of putting down wholesale stealing by means of proper supervision? Well, the Parramatta River is the worst place. Mr. Thompson can tell you that I have called upon him about it until I am almost ashamed to see him. Immense quantities have been coming in from there.

102. Of course we are looking to the future, and not to what is going on now, and I want to know whether you do not think that with proper supervision and inspection of the oysters imported and exported, if they were brought under the Customs regulations, this wholesale stealing might be prevented? Yes, to a great extent.

103. Are any oysters preserved for export in this Colony? I do not think so; I tried to preserve them myself, but the attempt turned out a failure.

104. Are any oysters so preserved that they can be transmitted to the towns in the interior? There is no occasion for it.

105. Do you mean there is no demand? No, but we send them up without preserving them.

106. You would find it very difficult to send a bag of oysters to Port Bourke, for instance, on account of the carriage. I am speaking of towns in the interior of the Colony? I am supplying the Adelaide market at present. I am not sending them further up the country than Bathurst.

107. Are you aware that they export largely from the town of Baltimore, in the United States of America? No.

108. Would you be surprised to hear that the annual export from that town amounted to two millions sterling. They take so much care of them there that, notwithstanding that oysters are an article of almost universal consumption, they export two millions sterling per annum? I do not think they can take more care of them than I do, but I do not know whether they have the same difficulties to contend with. Since I have had the Clyde River, the oysters I laid down to form a bed have never grown at all; they are all gone—the last flood covered them all over.

109. Covered them with sand? Yes, it was all black sand where they were.

110. Are there not places in these rivers where beds could be made which would be protected from the floods? No, sir, I think not, with the exception of the Hawkesbury River. I suppose I have at the present time not less than 10,000 bags laid down to form beds.

111. Are they natural beds or artificial—did you lay down ballast or any other material to form them? No.

112. Nothing but oysters? No.

113. They were tolerably firm then—free from mud? Only a little of it; of course there must be some mud in every bed.

114. Did you pay attention to the nature of the soil on the banks of the rivers where you laid down the beds—you would not think of putting oysters down on sand? No; the bed in the Clyde River was originally sand, but it was a great place for mud oysters until they all died off.

115. Have you done anything in the Hawkesbury or other rivers to improve the natural beds and to try and extend them? There are very few natural beds in the Hawkesbury River.

116. Have you done anything to improve or extend those that are there? Yes.

117. How have you done it? By laying down other oysters on them.

118. But have you tried to extend them by laying down dead oyster shells or other material? No; in all rivers there are too many dead oyster shells—any quantity of them.

119. What was the state of the oyster-beds when you leased them originally—are they improved at all since then? Yes.

120. How long have you had the Hawkesbury beds? A little over two years—about two years and six months.

121. Then they have not had much time to improve? No, but they are improving.

122. You stated to Mr. Holt that you have never adopted any artificial means of catching the spat? No.

123. Could not that be done very profitably in some of these rivers? I think not.

124. Why? Well, a very little flood would carry away anything of that sort.

125. Yes, but the expenso would be trifling; a few fagots or some such material would be the means of attaching millions of spat. You think the natural rocks catch all that is needed? Yes.

126. That is to say for our present consumption? Yes.

127. Supposing our consumption were a thousand times as large, do you not think an immense quantity of spat might be secured by artificial means? It might be done; I have never tried it.

128. I presume you will admit that there has been a great deal of destruction going on of valuable oyster-beds in the Colony—I am not alluding to your own—from the beds being over-dredged? I do not think so, since they have been leased.

129. I am speaking of the country generally, before the leases were issued? Yes.

130. Can you tell us anything of the quantity of oysters taken out of the rivers? No.

131. Have you any further suggestions to make before you leave? No. I should be very glad to show my place to any members of the Commission if they would like to see it. I have watched it very carefully, and have been able to form a pretty good idea of the places where the oyster will grow.

132. Will fatten, you mean; there is no doubt about their growing? Yes, but there are some places—I may mention one creek in particular as an instance of it—the Moonah Creek—where there is a point separating it from another creek, the oysters will grow there as much in six months as they will in twelve months in any other place.

133. What is the reason, do you know? It is in consequence of the quantity of fresh water that comes into the creek.

134. They grow best where there is plenty of fresh water? Yes, where the fresh water is continually mingling with the salt.

135. Do they breed there as well as in other places? No, they do not breed there so well.

136. Then they will not breed so well on ground where they fatten? No; and even in the creek where they do grow so well, if you take the oysters and lay them down in the beds they will grow faster than any others you could bring.

137. *Hon. J. B. Wilson.*] The best fattening grounds are high up the river where there is plenty of fresh water? Yes. *To the Chairman:* I was requested by the lessees to ask your permission to inspect your beds. I am going very largely into oyster culture, and I might be able to learn something from what I saw there.

138. *Chairman.*] I shall be very glad to let you see the improvements I am adopting from what I have seen on the Continent and elsewhere. In about ten days or a fortnight when the men are not so busy, if you will pay me a visit, I will show them to you.

Mr. John Emerson called in and examined:—

139. *Chairman.*] We have been appointed a Commission to inquire into the best mode of cultivating the oyster, and of utilizing and improving the natural beds, in order to recommend to the Government any legislation that may be necessary. Can you give us any information on the subject, Mr. Emerson. You are an oyster merchant, I believe? Yes. Before I give my evidence I wish to ask you one question which I hope you will not consider disrespectful. Am I to be examined as a lessee or as a private individual?

140. Not as a lessee. We merely wish to obtain from you such information generally on the subject as may serve to guide us in our recommendations to the Government. It is merely on public grounds that we do this. If any question is put to you which you think interferes with your interests, you can decline to answer it? I will explain my reason for putting that question. I am quite certain that if all the lessees were examined on this subject, my replies would be found to be totally different to all the others; consequently there would be five against me, and my opinions would go for nothing. I am quite aware that my views differ in every shape and form from those of the other lessees, both as to what has taken place and what ought to be done.

141. *Hon. J. B. Wilson.*] It is by collecting all the different opinions on the subject, and comparing them, that the Commission hope to be able to arrive at a correct decision. Therefore we shall be glad to receive any information you can give us? I shall be happy to afford you all the information I can.

142. *Chairman.*] You have been largely engaged in the oyster trade? Yes, for fifteen years.

143. You have also had some experience in oyster culture? Yes.

144. And in breeding and fattening oysters? Yes, in cultivating them on purely naked ground.

145. At what age do you consider oysters marketable, that is to say, in perfection for food—how long after they are spawned? Not less than five years, to attain a real good growth. They can of course be used sooner. I have some that were put down in April, 1874, two years and eight months ago, but to be thoroughly marketable and fit for food they ought to remain for two years more. They were no doubt about two months old when I laid them.

146. Where did you get them? From the shores of Botany Bay and off the rocks; they were collected anywhere.

147. Are there many small oysters sold in Sydney? A large quantity; they are used for what is called "chopping up," for the bottling trade, and are hawked about the streets, and sold in various ways.

148. Do you think it desirable that that sort of trade should be continued? No; it must end in the destruction of the beds if all the young oysters are used up; and by and by we shall be short of spat and all the natural beds will be worked out.

149. Don't you think it very desirable that the Government should adopt some gauge, and prohibit the sale of oysters for consumption that will pass through a ring of (say) $2\frac{1}{2}$ inches? It would be very difficult to do that, because there is such a difficulty in separating the oysters. Some of them grow together so that it is almost impossible to separate them. I think the better way would be to have a proper

Mr. F. J.
Gibbins.

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Mr. J.
Emerson.

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- Mr. J. Emerson.
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- proper inspection of the oysters after they are opened to see if they are fit to eat, in the same way that meat and poultry are inspected; and also to see if the oyster itself, not the shell alone, is an average size, because some oysters have very large shells and small fish.
150. But how could that be carried out. As far as I know, in no part of the world do they judge an oyster by the weight of the fish? (*Some samples of oysters were here produced.*) These oysters are only such as we commence to grow upon.
151. These small oysters come from Shoalhaven? Yes.
152. And they are sold as food in Sydney? Yes.
153. The fish must be very small? Yes; they are sold cheap; they are hawked about and disposed of, not as a luxury in the ordinary way, but for whatever they will fetch.
154. Have you seen oysters as small as these sold in Sydney? Yes, and worse, much worse.
155. Is not the oyster trade greatly prejudiced when such rubbish is sold for food? Yes, it acts badly in many ways. In the first place, the parties who sell these oysters, as long as they can make a living at it, strip them off the rocks without any regard to the future trade.
156. Is Shoalhaven a leased river? Yes, I believe it is under lease of older date to Mr. P. T. Johnson.
157. Is it the lessee who sends these in? Yes; they are put into the market as saleable oysters.

Mr. William John Langham, Inspector of Oyster-beds, called in and examined:—

- Mr. W. J. Langham.
6 Nov., 1876.
158. *Chairman.*] Perhaps you can give the Commission an explanation of the different samples of oysters now exhibited? They are samples which I procured from the shops this morning; there are seven of them. No. 1 is from Shoalhaven, at present under lease to Mr. Johnson.
159. *Hon. J. B. Wilson.*] And these oysters have been sent up to Sydney for sale by the lessee? Yes, with the exception of No. 5 and No. 7 samples.
160. And purchased by you at shops in Sydney? Yes, this morning. No. 2 sample is from Broken Bay, from Mr. Gibbins's place, who is also a lessee.
161. *Chairman.*] These also are sold in the shops? Yes, all the samples produced. No. 3 is from the Clarence River—Mr. Peter James, lessee; No. 4 is from Cape Hawke—Mr. George Clarke, lessee; No. 5 is from off a bed in George's River, cultivated by Mr. Emerson; No. 6 is also from George's River, from Mr. Emerson's lease; No. 7 is from the same bed as No. 5.
162. *Hon. J. B. Wilson.*] Do you consider it proper that these oysters should be offered for sale? Most decidedly not. I have complained over and over again to the lessees about it, but I have no power at present to prevent it.
163. With respect to No. 1 sample,—do you consider those oysters unfit to be sold in Sydney, on account of their small size? Certainly.
164. What do you think is the diameter of the largest? The largest I think does not exceed 2 inches.
165. And the smallest? About $\frac{1}{2}$ inch.
166. With regard to No. 2, the Broken Bay sample,—Are those oysters, do you think, sufficiently matured to be marketable? I think not.
167. And No. 3 sample, from the Clarence River? No, I think they might also be grown larger.
168. No. 4, from Cape Hawke? Yes, they are of average size.
169. No. 5, from George's River? Yes, I consider those marketable.
170. Would these last (No. 5 sample) go through a $2\frac{1}{2}$ -inch gauge? They would one way most decidedly.
171. We have evidence from Mr. Emerson that these oysters would require two years to mature? Yes, they would require all that.
172. And then they would not go through a $2\frac{1}{2}$ -inch gauge? No.
173. The samples No. 5 and No. 7 were not for sale in the shops? No; they are samples I procured to show the difference in size.
174. They are in fatter condition and more suited to the market than the others? Yes.

Mr. John Emerson's examination resumed:—

- Mr. J. Emerson.
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175. *Chairman.*] You have exhibited these two samples—Nos. 5 and 7—merely as a sample of your growing oysters. You do not consider that they would be fit for consumption for another two years? No; it would be to my advantage to leave them for that time. Of course, in the event of an emergency I could take them up and use them, but it would be more profitable to leave them, because they grow so much more during the last two years.
176. These mud oysters, which you get by dredging, of course are saleable? Yes; that is a sample (No. 7) of mud oysters of a rare species now nearly extinct.
177. Do you think it would be a wise policy—having regard to the public interest solely, without respect to lessees whose interests of course must be secondary—on the part of the Government, to prohibit the sale of these very small oysters, such as you have exhibited? Yes, I think no oysters should be allowed in the market except those that are a proper size.
178. Don't you think these small oysters have a prejudicial effect on the public mind to prevent the consumption? Yes, of course people who go into a shop and get these small oysters become disgusted and don't care to try them again for perhaps a month; whereas if they got good, fat, well-flavoured oysters they would make them a regular article of food.
179. And these same oysters if put on a good fattening ground would become large and healthy? Yes, I believe any oyster if put on to proper ground would grow.
180. Supposing a four-year old oyster were taken from the rocks and put on good fattening ground, would it grow? Yes, if it were taken off the rocks carefully without being clipped. All our George's River oysters grew on the face of the rock, and grew so thick that they grew outwards. When these are worked off they fall into the soft ground and become drift oysters. All these oysters are rock oysters, and if you take an old boot or a bottle and put it down they will adhere to it, but when they are put in soft ground they grow and fatten.
181. All the oysters in this Colony are of one species, are they not? Except the mud oyster—that is a different species. Even the stock of the mud oyster is different from that of the rock oyster. The stock of the rock oyster is on the left side, but in the mud oyster it is in the centre. There is a difference also in the shell,—the shell of the rock oyster is a flint, and that of the mud oyster is like a cuttle-fish, quite soft.

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182. Is there any difference between the oysters got on the shores here and those obtained in the Channel? No, they are just the same; the Tasmanian, Western Port, and Chesapeake Bay oysters, and the Jersey oysters of the south part of New Zealand, are all the same oysters. The strangest thing with regard to the mud oyster is, that if you go south of the 39° of latitude in New South Wales, and across to New Zealand and right through that Colony and to the south of it, you will not find the rock oyster—they are all mud oysters. In Auckland, New Zealand, the shell is of a flinty description.

183. Will those oysters keep for any length of time? No, when they have been thirty-six hours out of the water they open their mouths.

184. And how long will the rock oysters keep? I have known rock or drift oysters to lie exposed for a period of six weeks.

185. Without being spoilt? Without being spoilt, but alive then.

186. One will not keep for more than thirty-six hours, and the other you have known to keep for six weeks? Yes, that is my experience.

187. With respect to the spawning of oysters, Mr. Emerson, have you formed any idea as to the number of oysters spawning at one time at the same place? No; it all depends upon the condition of the oyster at the time; if the oyster is in good condition and the weather is favourable it will spawn, but I think the time of spawning is greatly regulated by the weather.

188. The object of my question was to ascertain, if possible, what percentage of oysters are spawning at the same time and on the same bed? I don't think the oysters on any one bed spawn at the same time. You may take a bunch of oysters and find that one is spawning and the other is not.

189. Do you think it is necessary to have a close season? I think not.

190. Are there certain months in the year only when oysters spawn, or do they spawn all the year round? They are continually spawning.

191. All the year round? I think so. In fact I have opened clusters of oysters and found one good and the other watery.

192. You sell oysters all the year round, from the 1st January to the 31st December? Yes.

193. And you think a close season would be of no advantage? I do not think it would.

194. *Hon. J. B. Wilson.* Do you think that all full-grown oysters spawn every year? No, I think not.

195. Well, what percentage of them spawn? I believe they all spawn when they come to maturity, but the time of spawning greatly depends upon the state of the weather.

196. That has a great deal to do with it no doubt, and a good deal of spat may be lost; but what I wish to know is, whether you have ever found in opening oysters that the whole of them were spawning—that is, were sick and unfit for food? No.

197. I am desirous of having your opinion, because it is the opinion of men experienced in oyster culture in England, that not more than ten out of every hundred spawn in the same year? I do not think they can have the same species of oyster at Home, because there we find that the mud oysters are only healthy and eatable and in their prime in the cold weather, and they must certainly spawn in the summer, while these large oysters are in their worst condition in the winter months.

198. I think you are mistaken as to the time these large oysters are fit for consumption in England. They are the only oysters that are eaten during the summer; it is only during the summer months that they can dredge for them. But it is not with reference to England, but to this Colony. Is it not a fact that during the whole year there are always good oysters in abundance, so that you have no occasion to throw them away because of their spawning? Oh, yes. We had one season when for fifteen months oysters could not be used in the Clarence River.

199. From what cause? Well, it was from some cause which we could not make out at all. Then there were other seasons when we worked the beds for eighteen months, and the oysters were in good condition all the time.

200. Were there floods,—was there a great deal of fresh water during that time? No; it was rather a cold winter. It has been just the same with the Queensland oyster beds. During one season they could be worked for fifteen months continually, and then a bad season would follow.

201. Then you think there is no occasion for a close season in this country? I think not, because there is no spawning season here, and if you closed the rivers for six months when the young spat was formed you would be unable to make use of it.

202. You think there is no more occasion for a close season for oysters than for sheep or cattle? I think not. I do not think, if you took any of the rivers, that you could determine the close season for two years; you could only see that a proper inspection was made to show whether the oysters were in a healthy condition.

203. Have you any idea of the quantity of spawn that a mother oyster will produce? No.

204. Some say as much as a million, and some even more? You could not make any calculation of that sort here, because during a cold or unfavourable season a great part of the spat would be destroyed.

205. Don't you think this is a very favourable climate for spawning? Yes.

206. Have you had any experience in oyster culture in England? No.

207. Have you made any experiments in forming artificial beds for laying down oysters? No, we have no occasion to do that here; we have such large quantities of spat lying about—any quantity of it can be collected.

208. Have you a large quantity of this spat on the banks of the George's River? Yes.

209. The banks are covered with it more or less all along the coast? Yes, except in places where there is sand; wherever there is a chance for spat to adhere to anything we find it.

210. And in Port Jackson there is a vast extent of spat also? Yes.

211. And no use is made of it? None whatever. You can go up Middle Harbour and find any quantity of it.

212. And if this spat were put on to good breeding ground it would grow and produce fat oysters? Yes.

213. Then is there not a very great waste in this Colony, since this spat is not collected and put in good ground. It is not perhaps felt at the present time, but if they go on working the beds they must die out? Yes.

214. Do you see any objection—I do not wish you to answer this question if you think it may prejudice your interests—to the Government giving licenses to persons whose business it would be to collect oysters from the rocks for the purpose of selling them to oyster growers and fatteners? I think it would be the proper course.

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215. It would give remunerative employment to a large number of persons? Yes, but I think it would only be fair if it were compulsory upon those persons who had licenses to collect the spat, to sell it to the lessees of the rivers.
216. I am not speaking of lessees—I am only suggesting a policy for the future; suppose, for instance, that these leases had expired? Oh, yes; but while the rivers are leased I do not think it would be fair that any persons should be licensed to take spat out of them unless they sold it to the lessees.
217. Of course not—that would be an interference with private property; I am speaking with reference to the future. Besides all the rivers are not leased.
218. *Hon. J. B. Wilson.*] With regard to these rivers, do you think it would be desirable to lease them without leasing the foreshore also, so that not only these persons could collect the spat, but the public could collect it also? It would be a good thing, but I think there should be places set aside for the purpose, that these people should be licensed, and that none of the spat should be sold under any conditions except for the purpose of planting.
219. Now we will take the Hawkesbury River for instance,—there is a much larger quantity of spat there than one person can make use of? Yes.
220. Then where would be the harm of licensing persons to collect that spat and sell it? I do not see why it should not be done if other persons will cultivate it—if persons who have spat do not make use of it, I do not see why they should not allow others to do so.
221. *Chairman.*] Is it the case that oysters which only get the benefit of the high tides do not thrive but die? They do not die, but they are always sickly from being exposed to the sun; if they are knocked off and thrown into the water they thrive and grow. I believe that any live oyster thrown down on the ground would grow.
222. If all the oysters on the rocks were knocked off and thrown into the water, would that interfere with the breeding, or would that go on just the same? They would breed just the same.
223. Then does not this supply, on the rocks along the river banks, appear to you an admirable provision of nature to meet an increased demand? I think that, as we are situated, the whole business is going to ruin, because we are so prolifically supplied that people will not turn their attention to the means provided for saving the oysters.
224. We get what in England is only obtained by a considerable outlay of time and expense, without the least labour or outlay? Yes, and if we did not get it so easily we should have to adopt artificial means such as are used in other countries.
225. Don't you think this profusion of young oysters is due almost exclusively to the genial warmth of the climate? I think so.
226. What I mean to say is, that if we had frost and snow here, as they have in England, the greater portion of them would be destroyed. In England, sometimes for ten or fifteen years, they have hardly been able to save any, while in France, where the climate is warmer, they can save large quantities? Yes, it is the rule to save them here, and the exception to lose them in bad seasons.
227. You think then that this climate, which produces vines and oranges, is peculiarly suited to the growth of oysters? I think so, as far as my experience goes. I know what has been done in my leases out of almost nothing, in the course of two and a half years. These oysters which I have exhibited to-day were grown from a mere nothing; they would not have been worth anything if they had remained where they were. I do not think there is any obstacle at all to the growth of oysters here if proper ground is secured. Of course it is a question whether they can be made to pay.
228. What do you consider the most suitable ground for fattening? Do you mean on the foreshore or in deep water?
229. I mean both? I think a clear shelly bottom, with about a 3-mile tide is about the best. The ground should be turned over with a dredge every three or four months, to prevent the oysters from getting into one mass. I believe that when they are spread out they get much larger. In a new bed we sometimes find it all like one crust, and then the oysters are very poor; they are so close that they live upon one another, and don't get the same chance to feed as when they are separated.
230. Don't you think they fatten much better when they are laid down separately? They would in still water; but I think where there is a running tide it is sufficient to keep them apart.
231. With regard to the soil, is not mud essentially necessary for fattening them? Mud is a very good thing for fattening, but when the mud sets over them they get smothered; they require much more care than they do on a firmer bottom.
232. Sand is very injurious to oysters, is it not? Yes; sand will choke them.
233. I will ask you another question having reference to the policy to be adopted in the future. Do you think it would be wise on the part of the Government to lease small areas for fattening grounds, or to continue the present system of leasing large blocks? I think the areas should be large, but that there should be conditions imposed with regard to cultivation. For instance, for every 100 bushels of oysters taken out of a river I think the lessee should be compelled to show that he had cultivated a certain proportion, enough to keep the river in working order. If you took out a bushel of oysters and put back a bushel of spat, you would get ten times the quantity, because you would have three crops.
234. If the Government were to issue licenses in the way we have spoken of to men of good character to knock the oysters off the rocks, and to sell them to growers, don't you think it would give employment to a large number of persons; that it would also be the means of stocking fattening grounds, besides producing a large quantity of wholesome food? I think so, if the conditions of the licenses were that these persons should sell the oysters to no one but the lessees.
235. Is it not quite as possible to make regulations to prevent oyster-stealing as it is to prevent sheep- or cattle-stealing, and other offences of that class? Yes, I suppose so. I think it is quite as much a crime to steal oysters from a person's ground as it is to steal sheep off a run.
236. Then do you not think it would be a wise policy on the part of the Government to adopt precautions to prevent such waste as exists at present? Yes; if the penalties were sufficient to prevent the sale of the oysters to any one except the lessees or growers, because sometimes there is a scarcity of oysters, and these men might get oysters instead of spat, and bring them into town and sell them for consumption.
237. But that would be prevented by an inspector, in the same way as the sale of unwholesome fish is prevented. Is it not possible to have inspectors to prevent the sale of oysters of improper size? I don't think that could be done, unless all the oysters were taken to one place for inspection before they were offered for sale, and that would be difficult.

238. Would not that prevent to a great extent the sale of small oysters? Yes. It would be to a certain extent an annoyance to lessees; for instance, where two or three hundred bags came in for the Melbourne market, if they had to be taken anywhere to be inspected it would be very inconvenient. It would also give one inspector an immense deal of work.

239. I am merely speaking of the principle and not of the details? I think the inspector should have power to inspect oysters anywhere, and to condemn them and prevent their sale if he considered them unfit, just as the Inspector of Nuisances has power to seize unwholesome fish. That would keep a good many oysters out which ought not to come into the market at all.

240. *Hon. J. B. Wilson.*] I suppose you are aware that there has been a very great destruction of the natural oyster beds of the Colony from over-dredging? I am well aware of it.

241. Do you think as a rule that these rivers which have been leased have been improved since they came into the hands of the lessees? I do not think so. I think they have been working them without any regard to the future; in fact, I have proved that one-third of the beds have been destroyed by competition—by one man working against another.

242. What is the term for which you think the Government should lease a river for cultivation? I don't think any term less than twenty years would be of the least use.

243. Do you think that is enough? If it were a longer term it would be a great encouragement, but it should not be less than twenty years.

244. Do you think it would be possible to carry out such an inspection of the oyster beds as to ensure their being handed over, at the expiration of the leases, in proper working condition? I think it would be, but it would take some time to find out the condition the beds are in at first. If that were properly done, it would be easy enough to ascertain whether they were left in the same state.

245. Do you think it would be desirable to insert in the lease a proviso that the beds should be returned in the same state as they had been in during the last five years of the lease? Yes, with the exception, of course, of accidents from flood or other causes.

246. Have you any information as to the price of oysters in Melbourne and the state of the oyster market at the present time? I have a letter from my agent in Melbourne, dated 30th October, 1876, in which he states that some oysters sent from Sydney to the Melbourne market, probably about 160 bags, were quite unsuitable. I also put in a letter from the same correspondent, dated 5 October, 1876.

Mr. L. Brooks to Mr. John Emerson, Sydney.

Melbourne, 5 October, 1876.

Dear Sir,

I wish you will oblige me to bring those facts before the Commission of Inquiry to protect and cultivate the oyster beds of your Colony. I want to show the reckless way the trade is being carried on, and the rubbish that comes from Sydney to the Melbourne market, in fact oysters that never ought to be allowed to leave the beds. It is a regular practice to send oysters in bags to Melbourne which are topped up; I mean by that that there are good oysters on the top and rubbish underneath, and the young brood that is in some of those bags ought never to be allowed to leave their beds; the result will be that at the expiration of some of those leases there will be no oysters left fit for use.

The result is, that with sending such rubbish, and more than is wanted for the regular supply, they are obliged to sell them by public auction at the fish markets, Melbourne. In one instance I saw eighteen (18) bags of Newcastle and Broken Bay sold for 20s. the lot.

I send you the price of which oysters have been sold by public auction during this last month.

Whatever information the Commission wish to get I shall be most happy to give them, either personally or by letter.

I am, &c.,

L. BROOKS.

Price of oysters sold by auction during the last month :—

									s.	d.		s.	d.
Newcastle	oysters...	...	...	...	...	...	...	...	4	6	to	9	0
Broken Bay	„	...	...	...	...	...	...	...	3	0	to	8	0
Clarence	„	...	...	...	...	...	...	...	3	0	to	9	0
Camden	„	...	...	...	...	...	...	...	4	0	to	10	0
Cape Hawke	„	...	...	...	...	...	...	...	6	0	to	9	0
Manung	„	...	...	...	...	...	...	...	11	0			

247. Have you any difficulty in getting a good price for good oysters in Melbourne? No, or I should not be able to get on at all.

248. While these inferior oysters have been sold in Melbourne for 3s. 6d. a bag, good oysters have still commanded a good price? Yes, from 27s. to 30s. per bag. Last year—the whole of last year I paid the Brisbane Oyster Company 18s. a bag for all their oysters, and that with freight and costs mounted up to 21s. when they were landed in Sydney, and if they had not been good oysters I should have lost money by them.

FRIDAY, 10 NOVEMBER, 1876.

Present :—

J. S. FARNELL, Esq.,

HON. J. B. WILSON.

THE HON. THOMAS HOLT, M.L.C., IN THE CHAIR.

Mr. George Clarke called in and examined, Mr. Henry Woodward, another witness, present by permission :—

249. *Chairman.*] You are an oyster merchant in Sydney, I believe? Yes.

250. We have been appointed by the Government a Commission to inquire into the best mode of artificially cultivating the oysters in this Colony, and of maintaining and improving the natural beds. I understand that you do a large business as an oyster merchant? Yes.

251. You have also some oyster beds, have you not? Yes.

252. Have you ever done anything in the way of cultivating the oysters artificially? Never.

253. You simply use the natural beds which you have leased from the Government? That is all.

254. You have no layings, as they are termed in England—beds prepared for laying down oysters? No.

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Clarke.
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Mr. G.
Clarke.

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255. With respect to the spawning of oysters, have you formed any theory on the subject—whether they spawn all the year round, or only during certain months? I believe they spawn at various times in various places; that is to say, they do not all spawn at the same time in the same rivers.
256. Do you think that in any place they spawn all the year round—every month? More or less they do.
257. They spawn more or less during every month of the year? I could not say that they spawn every month, but they spawn at various periods in the year.
258. Of course they spawn more during certain months of the year than in others? Yes.
259. What are the months during which, in your opinion, the spawning chiefly takes place? My experience leads me to believe that they spawn principally during the months of March and April.
260. Does that apply to certain rivers or to the Colony generally? I think it is the case in all the rivers, except about two or three.
261. Do you think it is desirable on that account that there should be a close season—that no oysters should be sold during March and April? I do not see what would be the advantage of a close season.
262. You think that there are always abundance of good oysters to be had which are not spawning during those months? Yes, large quantities of them.
263. As in the case of sheep and cattle, although the ewes may be lambing and the cows calving at certain seasons, still there is always a supply of good meat? Yes, it is just the same.
264. You think it is quite as applicable to oysters as to sheep and cattle? Exactly so.
265. And that there are as many good oysters in proportion as there are sheep and cattle suitable for food? Quite so.
266. Are there not a great many very small oysters brought into Sydney for sale? Well, since the rivers were leased by the Government there are not so many sent in.
267. But formerly there were a great many miniature oysters brought into town, were there not? A great many.
268. Which were not fit for food? Oh they were perfectly good for food, but not being large were unsaleable; they were sound and good enough to eat, but inferior on account of their size.
269. It is stated in England upon good authority that these small oysters are not good for food—that they are skinny and watery? Then it is because they are out of season.
270. It is not on account of their being young then? Oh no; I could show you small oysters which are very fat and good.
271. Is not that because they are on a good fattening ground, in the same way that lambs are fat? Yes, no doubt it depends upon the ground they come from. You will find that, however small, they are as fat as the large oysters.
272. They are something like what are termed “natives” in England? Yes.
273. What size are these small oysters—would they pass through a $2\frac{1}{2}$ -inch ring? Yes, they are smaller than that. I should say they would go through a $1\frac{1}{2}$ -inch ring; that would be a fair medium size.
274. Are you not aware that in many parts of England oysters are not allowed to be sold if they will pass through a $2\frac{1}{2}$ -inch gauge? I was not aware of the size of it.
275. That does not apply to natives? I believe the native is the smallest oyster they have in England.
276. These very young or small oysters that come into Sydney are not generally sold in the trade—they are used chiefly for what is termed “chopping up,” and for the bottling trade—is it not so? That all depends upon what kind of oysters you are working on. Some of the oysters, when full grown, are not very large oysters.
277. Still they would not pass through a $2\frac{1}{2}$ -inch ring? Yes, they would pass through a smaller ring.
278. Those I was chiefly alluding to are the half-starved oysters which Mr. Frank Buckland—a great authority on the subject—defines as “mere skin and water.” Are they not, when bought by the merchants, chopped up for bottling? No, it would not pay to chop up oysters of that kind; we use the largest and finest oysters for that purpose, the small ones would be useless for bottling. We should only think of using them in a time of great scarcity, as they are entirely out of season. At the same time there are always plenty of oysters in season: we can get good oysters all the year round.
279. Now, with respect to the leasing of these rivers and estuaries from the Government, have you formed any opinion as to the best policy to be pursued in the interests of the public,—is it desirable to lease them in large blocks or in small areas? I cannot see what would be the good of small areas. I took up one small portion on the Clarence River myself, and I never saw it. I paid my money, but there were no oysters on it, and it was no good to me.
280. But if it were rich ground could you not have improved it by laying down oysters upon it? It would not pay a small man to do that, unless he had the lease of such a place for fifty years.
281. Now that is coming to the point I wish to arrive at. If you could lease these mud flats for a longer period, would that not be an inducement to take them and expend capital upon them? Where should we get the stuff to lay down on them?—the man alongside of me might have a good patch, and my men might take his oysters to lay down on my ground.
282. If the law were not sufficiently stringent to prevent larceny it ought to be made so. I am asking you whether, if these rich fattening grounds were let for a longer period, it would not be an inducement to capitalists to stock them? What precaution should I have against floods?—they would destroy all my capital. I might lay down 20,000 bags and in twenty-four hours the whole of them might be destroyed.
283. We have a great many farms on low-lying lands, subject to floods, and they manage to get good crops off them? Yes, because they get a crop in a few months, whereas with oysters we should have to wait for years.
284. But the floods would only bring fresh water;—would that injure the oyster-beds so much? Yes. I could mention one bed at Port Macquarie which has been destroyed twice within the lease. Every bag that has come out of it has cost £5 or upwards. That is only one place. There is the Manning River also which is also subject to floods; there is an oyster bed at the bar, one of the finest I ever saw, which has been destroyed for the second or third time.
285. What is the nature of the beds;—are they composed of blue clay, soft to the touch, like soft-soap? Not quite so soft as that, but something similar; but the one on the Manning bar is a sandy bottom.
286. Oysters do not fatten there, do they? Oh, yes; no oysters could exceed those that come from that bed, in any part of the world.

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287. Where the oyster beds are subject to floods there is no inducement to incur the risk ; but are there not many places where there is good laying ground which is not subject to the action of floods ? There is no place in the Colony where the rivers are not subject to floods periodically.

288. Enough to destroy the oyster beds ? Yes, to destroy them for years.

289. Then you do not think there is much ground for artificial culture ? No, not artificial.

290. You have no doubt observed in many parts of Port Jackson and in some of the rivers that the rocks are completely plastered with rock oysters ? Yes, there is no place for that like our harbour of Port Jackson ; but our rivers are not like that—in some of them the oysters attach themselves to the mangroves.

291. Now if these young oysters were removed from the rocks or mangroves and laid down on rich mud, would they not produce rich and good oysters ? Well, I have laid oysters in that way in some two or three rivers, and they have never come to much—they have not grown a very great deal.

292. But if they had remained where they were, on the rocks or mangroves, they never would have come to perfection ? Oh, yes ; they come to great perfection on the rocks if they are left there.

293. Those high up on the rocks do not come to much ? Of course they are not so good as those that are covered by the water, but the small ones will become large.

294. Not if they are very high up on the rocks ? Yes ; although they are scarcely ever touched by the water they will grow to a good size, more especially on the Parramatta River. Mr. Josephson had some on his estate, some of the finest I have seen, and the water scarcely ever touched them.

295. Were the fish good and well flavoured ? Yes ; there is nothing so sweet as a first class rock oyster.

296. That may be a solitary case. Is it applicable to all the rivers with which you are acquainted—do the oysters which grow high up on the rocks come to perfection ? Yes, they come to perfection, but they are not so good as those which are covered with water.

297. Now, supposing there were licensed oystermen who would knock off the small oysters from the rocks and sell them to those who would lay them on good ground, would not those oysters come to much greater perfection than they could on the rocks ? Not having seen any of that kind of culture I could not say.

298. Have you had any experience in oyster culture in England ? Never.

299. But you have read that the celebrated Whitstable oysters are five-sixths of them purchased in large and small numbers from men, women, and children, who collect them and then laid down to grow ? Yes, but there is so much difference in the species and class between the oysters in England and those in New South Wales.

300. You think there is a difference in the species between the oysters in this country and those in England ? Yes.

301. In what respect do they differ ? In size and make, and in the hardness of shell. I have seen nothing like the English oysters except those we used to get from the Parramatta River some years ago—mud oysters.

302. Do not they resemble what are called the Channel oysters in England, or those that are artificially cultivated ? Not so much ; but we used to have oysters on the Parramatta which very much resembled the English natives—they were not much larger. That is not very long ago ; but they have wholly deteriorated since then. There were beds and beds of them.

303. How many years have you been in the trade ? Thirty years.

304. Do you find much change in the beds ? In what respect ?

305. Have they been seriously injured by dredging ? They were some years ago.

306. That is to say, there is nothing like the quantity of oysters on their natural beds that there were thirty years ago—is that the case ? Well, I see no difference. I think we have as many oysters now as we had thirty years ago. We keep turning out the same quantity year after year.

307. Then you think that what has been said about the beds being exhausted by over-dredging is not the fact ? Well, it was supposed that when the rivers were leased by the Government they were in a very low state, and we know by experience that there was nothing in some of them.

308. They had been injured then at that time ? Yes ; for instance, in the George's River there was nothing, and I remember when two men in my employ, who went to California, used to bring me as many as 40 bushels of oysters of immense size, and in those days they used to be burned for lime in thousands of bushels, as well as used for food.

309. Then George's River is one that has been seriously injured by over-dredging, and the oysters have also been used for improper purposes ? Yes.

310. And have other rivers been similarly injured ? Yes, the Newcastle River.

311. Any other rivers ? Those are two of the chief.

312. The rivers you leased from the Government had a rest for some time, had they not ? They were supposed to have, but the oysters were sold just the same.

313. Then the rest was no advantage to you ? No, rather the reverse.

314. It would have been better for you to have had your lease before the rest ? Yes.

315. Are all the rivers in the Colony subject to floods—there must be some in which the oysters are not liable to be destroyed in that way—are there not places in the George's River high up where they are not killed by floods ? In George's River the oyster beds are pretty free from floods, and it always was so.

316. And about Liverpool the floods cannot be very high ? No, but I don't think the oysters go as high up as Liverpool.

317. Supposing that there are rich flats available, do you not think it would be advantageous for the Government to let them in small blocks to persons who would purchase spat and cultivate it—don't you think in that way we should have more mature oysters, that it would also give employment to a number of persons and be the means of creating a valuable industry ? I don't think the time is ripe yet for artificial culture.

318. Have you any idea of the average number of oysters to one acre of ground ? Not the slightest.

319. Would you think a million too many—it is said that one acre will yield a million oysters. In England where a man has 4 or 5 acres he is considered rich. Now if the same system of culture were carried out in this Colony, don't you think it would be advantageous to the public ? I do not indeed, sir ; I don't think any one would take the trouble to go into it, so long as there is such a profusion of oysters in New South Wales.

320. But are not some of the neighbouring Colonies dependent upon this Colony for their supply ? Yes, that is upon New South Wales and Queensland.

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321. Is it not a fact that great numbers of oysters have been sold in Melbourne for a merely nominal price,—not because there was no demand, but because they were in an immature state and unfit for the market; don't you think that if they had been fine well-grown oysters they would have fetched a good price? No, sir, there is no demand; I have sent down some of the finest oysters possible, and they have been literally given away—sold for 10s. a bag.
322. We have it in evidence that the reason these oysters were rejected is that they were too small? No, it was because the market was glutted.
323. *Hon. J. B. Wilson.* We have it in evidence that certain oysters sold for 25s. a bag, and that certain other small oysters only fetched 2s. 6d. and 3s. 6d. per bag? They may certainly have been of inferior quality, and the market was glutted. If they had been of good quality they would not have been sent to the fish market at all.
324. Don't you think that if these oysters had been good, there were plenty of people who would have had sense enough to have bought them and to have laid them down somewhere to get fat until they were wanted? No, there is only one firm, the Western Port Oyster Company, who have tried to do that, and they have lost thousands of pounds by it.
325. The Western Port Company killed their own beds—the natural beds, I believe? Yes; whether it was from over-dredging I cannot say, though some of them furnished a supply enough to use up all the oysters in the country. They were like the English oysters; we have scarcely any like them now, except a few on the Parramatta River.
326. You think they were an entirely different species? Altogether different.
327. If you took these rock oysters and laid them down in rich mud, would not they become altogether different—Supposing you took young oysters before they had attained any size or shape, and separated them and put them down on rich clay, such as they make use of in England for fattening ground, would not those oysters become altogether different both in shape and appearance—almost a separate species from what they would have been if they had remained on the rocks or mangroves? I cannot see what would make them alter; the shells would be the same.
328. That is only your opinion,—you have not made the experiment to see whether the shells would be the same? I have had oysters laid down on the Parramatta River for three years. I laid them on Mr. Josephson's property, with his permission. I used to take some of them at various times off Mr. Josephson's rocks and lay them in deep water, and whenever we examined them we found they had increased considerably in size, but they were not different in appearance from those attached to the rocks, nor were the shells altered at all; they were just rock oysters and nothing else.
329. But you found that they had improved considerably in growth and quality after they were put on to rich mud? Yes, but it would not do to put them in mud; it was a kind of sandy loam.
330. I believe marl makes the best bed where there are plenty of oyster-shells. At any rate, if removed from the rocks and placed on rich laying ground, they would improve wonderfully, and grow very considerably? Yes, they would shoot rapidly.
331. And fill out? Yes.
332. Well, you see there are an immense number of these oysters on the rocks about Sydney, and if they were all transplanted to rich ground, would they not produce a large quantity of wholesome food for the inhabitants? Yes, but such an immense quantity of them would reduce their value considerably.
333. Do you remember, just before the gold discovery, that there was such a quantity of beef and mutton that there was a difficulty in knowing what to do with it? Yes.
334. Do you think there would be any fear of an equally large surplus of oysters? I do not think so.
335. Oysters are very wholesome food, are they not? Yes.
336. And quite as much a delicacy as beef and mutton? Much more so.
337. Then if you can produce good oysters—not the skin and water kind of oyster of which Mr. Frank Buckland speaks—would you not have a large demand for them beyond comparison with the present demand? There would still be skinny oysters, the same as there are now, because that comes from their not being in season.
338. Is there not an Inspector of Nuisances at present who inspects and condemns unwholesome fish? Yes.
339. Well, if we had an Inspector to look after oysters, would not he prevent oysters of that description from being sold? Well, he could not condemn them because they were not fat. Some persons do not care about fat oysters; they say—"Don't give me those very fat oysters, I like them to taste as if they had just come out of the salt water."
340. Frank Buckland, the greatest authority on oysters, says that when they are watery and skinny they are not good to eat? I will defy any person to condemn an oyster when there is nothing the matter with it.
341. Then if beef or mutton is thin and skinny you would not condemn it as unfit for food? No, because there is nothing the matter with it. I see plenty of meat hanging up which I should not care to eat myself; but it is cheap, and people buy it for that reason; it is sound and wholesome. It is the same with oysters, they are sound and fresh as they come out of the water, and there is nothing the matter with them. Many people do not care about fat oysters, they say—"You know my taste, Clarke, don't give me any of those very fat oysters."
342. I may mention that we had some oysters exhibited in this room which I should scarcely like to say were unwholesome, but were scarcely fit for human food. There was nothing in them, and it appears to be a mockery to sell such young oysters? Well, I could produce some very small oysters which you would find very fat and well-flavoured—in fact beautiful oysters, although small.
343. *Mr. Farnell.* I understand that you know nothing about the culture of oysters? No.
344. All your experience has been gained by working the natural beds? Yes.
345. Speaking of the Parramatta River, I think you said that you had dredged it for thirty years? Yes.
346. For mud oysters? Yes.
347. Are you quite sure they were not a kind of oyster between the mud oyster and the drift oyster? No, they were mud oysters.
348. They were in shape much the same as the mud oysters, but were not dredged out of the mud? Yes, they were all dredged, but off the hard bottom.
349. Where did you get them? From the channel of the river.

350. Do you remember where they commenced to dredge when they discovered these oysters? They were getting some at Pyrmont, I believe. Mr. G. Clarke.
351. And then they continued up the channel to Charity Point? Yes. 10 Nov., 1876.
352. Are there any of the same kind of oysters now in the Parramatta River? They are almost wholly deteriorated.
353. What has been the reason of that? Over-dredging, beyond all doubt.
354. That is to say, the whole of the oysters were dredged and none left to spawn and breed? Just so.
355. Have you tried to take up any lately? Last winter I saw a few, perhaps a couple of dozen, got off the bottom, but that is all.
356. These oysters were attached to each other? No, they were single; you may perhaps among the very young oysters find a few attached to each other, but they separate very easily.
357. Then it is a fact beyond all doubt that the deterioration of the oyster beds in the Parramatta River has been caused by over-dredging? Without any doubt.
358. You have spoken of the beds on the Manning and other rivers as having been destroyed by floods,—is it the fresh water that kills them or the mud that smothers them? They get covered over; in one river the whole of the oysters were smothered with sand.
359. Are you aware that the bed of the Hunter River, or some portions of it, has very thick beds of shells on it? Yes.
360. Can you give the Commission any idea how these dead oyster-shells come there;—was it from the floods destroying the oysters from time to time? That has always been supposed to be the reason, but it has never been clearly ascertained; there are immense banks of shells there to the present day—any amount of shells on the Hunter.
361. You are aware that large quantities of oysters used to be taken out of the Hunter for the purpose of burning lime? Yes, I have seen it myself; I have seen boat-loads of oysters taken up which, if in England, would be worth ten guineas a bushel.
362. Referring to the bed on the Manning River bar, where you say the oysters fatten so well,—what has destroyed that bed? The floods have done that.
363. The deposit of sand or mud from the floods has totally destroyed it? Yes, and it is not the second or third time that it has done it.
364. Are the oysters lying on the bottom? Yes, lying on the bottom just inside the bar.
365. Not on the bar, but just inside it? Yes; it is a great pity to see it.
366. It is your opinion that oysters in this country spawn all the year round? Yes.
367. But not all at the same time? No.
368. Therefore there are always a quantity of eatable oysters? Yes, we can always get them. In fact, in the same river oysters will be spawning in one part of it and not in the other, either higher up or lower down; but there are always a quantity of fine eatable oysters.
369. Are you aware that they spawn at different times in the same river? Yes, they must do, or how would you account for some of them being poor and others fat? They are always poor directly after spawning. Mr. Holt says, the Inspector would condemn them for that, but there is nothing the matter with them except that they have been spawning.
370. Then don't you think they ought to have a period of rest when they may spawn? Oh yes; if I found the oysters poor on one bed, I should go to another bed in the same river where I could get good ones. You could not close the river.
371. What I want to ascertain is this—whether by the non-closing of these rivers the oysters will not be altogether obliterated, as has been the case in the Parramatta River. If there is to be no close season, and the oysters are to be taken indiscriminately, would not the final result be that the whole of the oysters in the river would be annihilated? It would take a very great number of years.
372. If you go on dredging a river without giving the oysters time to spawn, must not you destroy them by not allowing them to breed? I cannot say, I am sure. I can only speak of the Clarence River with respect to the production of oysters.
373. Suppose you were to kill ewes in lamb or cows in calf, would you not destroy their progeny? Certainly.
374. If you destroy spawning oysters is it not the same? The yield of oysters is so immense.
375. What is the yield of an oyster, do you know? I do not know; some people say a million.
376. Well, notwithstanding that you can, as you say, get eatable oysters during the whole year, the persons who dredge for them do not use much discrimination in taking them, whether they are spawning or not? Oh yes, they will not take them if they are spawning.
377. How do they know whether they are spawning if they do not open them? There is no occasion to do that—you can see the spawn floating about. The oysters are not good when they are spawning.
378. What are these poor skinny oysters? They are poor after spawning.
379. Have you had much experience in the collection of oysters off the rocks? I have used a great number of them.
380. Do you get as good and fat oysters off the rocks near low-water-mark as you do out of the rivers? Yes, sometimes, but they are not so thick.
381. Are the oysters in Middle Harbour, and on the rocks down the bay, as far as Shark Island, as large as those higher up the Parramatta River? There used to be some very fine ones in Middle Harbour some years ago; I have not seen them of late.
382. Are you aware that the oysters do not grow so large near the sea-coast—that the saltiness of the water affects their growth? I was not aware of it.
383. Do you know from experience that oysters grow better in a place where fresh water and vegetable matter flow in and mix with the salt water? Yes, I know that from my experience on the Clarence River.
384. Do you know whether there are male and female oysters? No.
385. Do you know how they get their food? No.
386. You have had more to do with dealing in oysters than in cultivating them—in purchasing them and selling them again? Yes.
387. I think you stated that when the rivers were closed a great many oysters were stolen? Yes, that used to be the case, but since the rivers have been leased that has been put a stop to, to a great extent.
388. Do you, as a lessee, adopt any means of improving your beds? We do not take up young oysters.
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389. That is the only distinction? Yes; we know when they are saleable.
390. You do not increase the production of the oysters? Not by artificial means; in fact there is such a quantity of them that if it were not for the floods in the rivers they would become of no value.
391. Does New Zealand produce many oysters? Great quantities.
392. Do many of them come in to Sydney? Some of them.
393. Do they fetch a good price? There is no sale for them—they are thrown away.
394. *Hon. J. B. Wilson.*] Is there any export trade for oysters from this Colony except in bags to Melbourne—are any preserved oysters sent away? No.
395. Do you happen to know what the annual export of oysters is from the town of Baltimore in the United States of America? Something fabulous, I believe.
396. Is it two millions sterling. Can you see any reason why we should not preserve oysters and send them up the country? The oysters you are speaking of are different from ours. If you were to preserve our oysters you would find that they would shrivel up into little things the size of nuts.
397. Have you seen any of the American oysters in the market before they were preserved? Yes.
398. Are they larger than that (*exhibiting top of ink-stand*)? Much larger.
399. Well, I have seen American oysters, and I have seen much larger ones here? We used to have very large oysters of that kind in the Parramatta River.
400. *Mr. Farnell.*] But they were not better than those in the George and Clarence Rivers? No. I have been a lover of oysters all my life, and I never saw finer oysters than those from the George's River, but they have deteriorated much in flavour.
401. After mature consideration, do you think it is unnecessary in any particular river to have a close season? Not while we have such a profusion of oysters.
402. Do you know whether the oysters to the north spawn sooner than those to the south of the Colony? I do not.
403. The oysters in the northern rivers spawn sooner than those in the southern rivers? I do not think so; the Newcastle oysters spawn somewhere about Christmas time, or a little after.
404. Do you know whether the oysters spawn during the winter months? If it is the spawning that causes them to be poor I should say they all spawn in the winter months—May, June, July, and August are the four months that they are supposed to be the poorest. But I have had oysters from the Tuross River quite fat during those months; it would be impossible to find fatter or finer.
405. *Hon. J. B. Wilson.*] Are there not many circumstances that would tend to make oysters poor other than spawning, are there—for instance, would not floods sicken them and make them poor? Fresh water makes them fat; I have known them burst with fatness.
406. When there is a great quantity of alluvium settling down after a flood has it not a tendency to make them poor? Well, the Hunter River has deteriorated very much this year, and I have never been able to ascertain the cause. I have thought that the steamboat traffic upon it has interfered with the beds very much.
407. *Mr. Farnell.*] It would affect the spawn? Yes, it does not settle. During the last three or four years the oysters from the Hunter have deteriorated in every respect.
408. Are you aware that severe frosty weather affects the spawn of oysters at a certain stage of their growth? No, I am not.
409. I think you said you did not know how much spat a single oyster will produce? I do not; I have asked a good many fishermen, but none of them could tell me.
410. The number is about two millions? Is it?
411. You do not think it is desirable to lease these rivers in small areas? I do not think it would pay; several persons have taken rivers in that way, and they have all given them up. There is only Captain Griffin, of Port Stephens, who has kept his on, and he cannot get any oysters out of his creek only about two bags a week; he has been ten years at it.
412. *Chairman.*] Are there many stolen oysters consumed in Sydney, do you think? Well, even now at the present time it is done. There is only one river of which I can speak with any very great certainty, and that is the Parramatta River; hundreds and thousands of bags have been stolen out of it since the closing.
413. What would you suggest to prevent it? I have seen a good many convictions lately at the Water Police Court by Inspector Ferris, but whether the fine is not sufficient or what is the reason I cannot say, but they go at it again.
414. What can you suggest—Do you think imprisonment instead of a fine, after the second or third offence, would have the effect of putting a stop to it? That might deter them.
415. Don't you think the receiver is just as bad as the thief? You see they don't ask any questions; a man sees a good bag of oysters and he buys it.
416. Should not some precautions be taken, such as are adopted to prevent cattle-stealing; for instance, men taking cattle from one place to another must have a pass; a butcher must have a license, and so on—What is your opinion as to the best precaution to take to prevent oyster-stealing? I don't think anything would prevent it in the Parramatta River.
417. *Mr. Farnell.*] Unless you had a sufficient number of persons to watch them? I don't think it could be done; why they are getting the oysters all the time they are watching the police boat, under some bank among the rocks.
418. *Chairman.*] Then you think that it is better to let them continue to steal rather than to adopt stricter measures to prevent them? Well, you see these men look upon the oyster beds as a sort of heirloom. They say to me—"We have got our living on this river for years, and we are surprised at you, Clarke, trying to take the bread out of our mouths."
419. But if these men were licensed, and paid £1 a year for the right to take oysters off the rocks, in the same way as timber-cutters are licensed to cut timber, would not that effectually prevent stealing? Well, there would be no harm in it.
420. What is your opinion as a practical man? I know that on the Parramatta River the oysters would still be stolen.
421. But the men would pay the £1 a year, would they not? Yes, they would pay that.
422. How long would it take them to strip the whole river in that way? It would not take long—there would be a great number of persons.
423. If all the oysters were taken away there would be none left to spawn? Oh, there is plenty of spawn; in fact the rivers were never in better condition than they are at present.

Mr.

Mr. Henry Woodward examined:—

424. *Chairman.*] You are an oyster merchant in Sydney? Yes.

425. You have heard me state to Mr. Clarke the object for which this Commission was appointed? Yes.

426. Any information which you can afford us we shall be glad to receive. Please to give us your opinion as to whether it is desirable, in the interest of the public, to lease large blocks as at present, or to lease the oyster-bearing rivers in small areas? My opinion is that the present mode of letting the rivers tends to prevent stealing. Of course a man cannot rob himself; but if there were a number of lessees pretty close together, the man who got a poor part of the river would probably take the oysters from some other bed where they lay thick and plentiful. We are quite sure this would be done, and we can't guard the rivers day and night.

427. But it is very possible to define the boundaries of the different leases by means of buoys? I don't think it is; if you were to put down buoys, in times of floods the dead timber carried down by the stream would catch hold of them and take them away. That would not happen in all rivers; for instance, the George's River, which is broad near your place, you could define the boundaries by buoys, but in other rivers you could not.

428. But don't you think the rivers could be utilized to a much greater extent if they were leased in small areas, and that this would give employment to a large number of persons? I believe there would be more oysters produced.

429. *Mr. Farnell.*] Will you explain what you mean by produced? I mean you would get more oysters out of the river. I believe if the rivers were put up in beds that poor men would take a bed here and there, and if they found oysters scarce it would be their business to obtain some elsewhere to enrich their beds.

430. *Chairman.*] Where would they get them from—off the rocks and mangroves—the small oysters which stick to them? Yes.

431. And these oysters being taken from the rocks and mangroves and planted on suitable ground, would grow large and saleable? Certainly they would; a great many would die from being cracked in taking off, but a large number would grow.

432. But if carefully taken off the rocks with a chisel there would not be a very large percentage killed? Yes; the way they grow in many of these places along the beach is in bunches, and they separate them with a knife.

433. Have you found it to answer well? In some instances we have lost every one, but in Camden Haven we have had 1,000 bags laid down, and I believe they have prospered well.

434. Then you do cultivate them artificially—Mr. Clarke said he did not? Mr. Clarke did not understand the purport of your question. He understood you to ask him whether he got a few oysters here and there and laid them down on artificial beds. We have laid lots of oysters down—Mr. Clarke is connected with me—and we have lost a number of them; we lost all that we laid down on the Manning River.

435. *Hon. J. B. Wilson.*] Mr. Clarke spoke of a valuable bed inside the bar of the Manning River? Yes.

436. Is it the case that that bed is all sand? No, it is not sand, but the sand covers it up; it is a sort of rocky sand bottom.

437. Could not you immediately after a flood, do something to save that bed, by raking it over so as to dislodge the sand? The oysters would be completely smothered with mud and sand before you could get at them, and the sand chokes them. Only a few weeks ago there was a little fresh on that bar, and it destroyed every oyster upon it; that is one of the finest beds possible.

438. Could nothing have been done immediately after the flood to save those oysters? Nothing, sir; and I will tell you another thing,—on that Manning River the fresh water kills them. I will tell you another thing,—we have a large shed, 100 ft. long, floored with battens about half-an-inch apart so that the water can get in between them; we had it full of oysters, and the flood water settled on them and killed them. The shed too was clear of the bank. Still that is not the case in every river; there are plenty of other rivers where the floods do not affect them at all.

439. There are a good many banks on the Manning River of rich alluvial soil, and when the flood waters come down a great deal of this alluvium is held in suspension by the water? Yes, and it settles on the oysters and kills them. During the last six years I have known that bed to be covered over several times, still the oysters settle there again.

440. *Chairman.*] Until another flood comes and destroys them? Yes; I believe it is no use to try to do anything there.

441. Are there any creeks connected with the Manning River that would answer? No, there is only Scott's Creek, which leads from the north to the south passage.

442. Is that a good place for oysters? There was once a famous bed for oysters there, when the old south bar was banked up and no water could run in or out there; but when the south bar was opened out the oysters came into the south passage and died out in Scott's Creek. It only became dead water then—there was no current. As far as my experience goes, there are no good oyster beds except where there is a good current of water. I could show you that in fifty places on the Parramatta River without going further.

443. But we see that in France oysters fatten in still ponds—old salt ponds? Yes, I have heard so, and I believe it; but I have had a good deal of experience here, and I have never known it to answer in still water.

444. Is it not a fact that large quantities of miniature oysters are brought into market in Sydney and sold as food? They are not brought now; it is not to be supposed that we should be foolish enough to bring in oysters that we could not sell at a good price.

445. Understand me, I am not speaking personally; there are a great many oyster merchants in Sydney. Is it not a fact that a large number of very small oysters are brought into Sydney? There are none brought into Sydney except by lessees; and it is not to be supposed that we should bring in very small oysters and sell them at 15s., when by keeping them a little longer we could get a pound.

446. But we have heard of small oysters sent to Melbourne by lessees which were condemned as unsaleable and sold at 3s. 6d. a bag? The only oysters sold at that price are those from Brisbane, and we have no control over them. There have been a large quantity of very poor oysters coming in lately, and it is those

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those that have been sold at a low price in Melbourne, and not New South Wales oysters. We serve half the shops in Sydney, and we have all got the same oysters that Mr. Clarke has. We only sell the oysters from two rivers, the Cape Hawke and Clarence Rivers.

447. We have had oysters exhibited here not larger than that (*exhibiting top of inkstand*). Now will you be good enough to give us your opinion—you must consider these questions not addressed personally but generally—whether there are not a great many small oysters sold in Sydney at the present time; not so many perhaps as were sold formerly, but still a great many miniature oysters? Well, I cannot say a great many. I am not afraid to tell the truth. I was walking along King-street the other day and I certainly saw a number of small oysters, and the person who had them wanted to buy some from us. I don't think it right to mention his name, but at any rate the oysters were from one of our rivers.

448. *Mr. Farnell.*] From a closed river? No, sir, the river is not closed.

449. *Chairman.*] Do you think any legislation is necessary to prevent the sale of these very small oysters? I think so; I would try and prevent it if I had the power.

450. What gauge do you think it would be advisable to adopt—it would be necessary to fix some size? Well, in some rivers I should think $2\frac{1}{2}$ inches would be about a fair average.*

451. And that the sale of all oysters which would pass through a $2\frac{1}{2}$ ring should be prohibited? Yes, I think so; I do not mean every one, because there would always be here and there in a bag some that would go through; but I think the average should not be less than that.

452. Don't you think that if the public were supplied with good oysters they would buy much more largely than they do while this rubbish is sold? I should certainly think so.

453. You think the consumption would greatly increase? Certainly.

454. Do you not think it is to the interest of the oyster-dealers that there should be some legislation of that kind? Yes. I know we have tried all we could to stop it.

455. Do you think these skinny watery oysters are fit for food? No.

456. There is no nourishment in them? No; and I do not believe they are fit for food.

457. Then you think the Government would be quite as much justified in putting a stop to the sale of these small oysters as they are in prohibiting the sale of unwholesome fish? Yes, I do think so.

458. And if put on good fattening ground they would grow and become good oysters? You must understand that when an oyster is out of season it is poor, no matter where you put it or what it feeds on; you cannot make it fat until it comes to its season again.

459. Certainly, but after it recovers its sickness it would become good wholesome food? Certainly, if left where it was till its season came it would grow and become a good size.

460. Have you formed any theory about the spawning of oysters—do you think they spawn all the year round? No, I do not think they spawn all the year round. I am certain beyond all doubt that as a rule they spawn in March or April. I have paid great attention to this during the last twelve months especially, and I have never known them to fail during those two months.

461. That is only applicable to certain localities? I could mention four different places where that rule holds good.

462. They all spawn about the same time? All about the same time.

463. Have you not found spat in almost every month in the year in the large and small creeks? Oh, yes.

464. Then do you not infer from the finding of this spat at all times that some oysters, many or few, are spawning all the year round? Yes, I am sure there are some rivers where oysters on one bed spawn one month and on another bed the next month. I know one place where all the dredge oysters spawn in October or November, and I am aware that those which are found down near the sea are fit for eating all the summer, and spawn in the winter, just six months between them and the others. The dredge oysters are found in the upper part of the rivers and the bank oysters in the lower.

465. Do you think it necessary that there should be a close season during certain months of the year, when no oysters should be sold? I don't think it would be advisable; I think if you could prevent those poor oysters from coming into the market, which might be done under the Corporation laws, it would be sufficient.

466. You are of opinion that there would always be a sufficient quantity of good wholesome oysters obtainable all the year round? Yes, we could get enough to go on with. They are not so abundant at certain times in the year. Last year was a very bad year, owing to the long drought; none of our oysters to the north came on till after Christmas.

467. Of course we cannot provide against natural drawbacks, but I am speaking of legislation. You do not think it necessary to prohibit the sale of oysters in the Sydney market during any portion of the year? I do not consider it necessary.

468. You think it will be sufficient to prohibit the sale of small oysters? Yes.

469. *Mr. Farnell.*] Would it be practicable or advisable to close part of a river—certain beds—during a stated time; would it be possible and practicable to fix the close season by legislation? Oh yes, it would be practicable if you had a proper person to inspect the beds.

470. *Chairman.*] Would it not be sufficient if these persons were prevented from offering oysters for sale in the market that were in bad condition? I think so.

471. *Hon. J. B. Wilson.*] Could they tell whether oysters were in bad condition without opening them—You stated just now that the Corporation authorities might prohibit the sale of poor oysters—would it not be very difficult to determine which were poor and which were not; there might be a quantity of good oysters in a bag, and there might be some bad ones? It would be very difficult to define which were good and which were bad.

472. You have stated that during all seasons you can get a sufficient quantity of good oysters, but are they not got by the sacrifice of a great many poor oysters—that is to say, in getting the good ones do you not destroy a great number of poor ones? Well, there are always a few poor ones on the same bed.

473.

* NOTE (*on revision*):—When before the Commission yesterday I was asked what size should a fair grown oyster be, should it be of a size that it would not pass through a 2½-inch ring. I answered yes, it should be of such a size. While being asked and answering this question there was lying before me on the table the round top of an ink-pot, which I thought was about the size of a 2-inch ring, and not thinking an oyster that size would be a fair grown one answered yes, it should be able to pass through a 2½-inch ring; but, upon reflection and actual measurement of fair-sized oysters, I find I have given a wrong answer. Our oysters are not round in shape, as is the English, but long and narrow, and one of ours that would pass the narrow way through a ring $1\frac{1}{2}$ inch would be so long that it would hold fully as much fish as the round English mud oyster $2\frac{1}{2}$ inches. I therefore give it as my opinion that our oysters that would not pass through a ring $1\frac{1}{2}$ inch would be a fair marketable oyster, and those that would not pass through a 2-inch one would be large for New South Wales.—HENRY WOODWARD. 11 Nov., 1876.

473. And you think that as a rule they spawn chiefly in March and April? Either in March or April; that is about the time I believe the bulk of them spawn, and they remain poor all the winter.

474. *Chairman.*] Have you done anything to secure the spat, as is done in Europe, by putting down piles of hurdles or other material? No, we have not put down anything on purpose, but we have plenty of spat.

475. You consider that unnecessary on account of the large quantity of spat to be found clinging to the rocks and mangroves? That is it, sir.

476. If you require any oysters to plant, there is always an innumerable quantity to be found on the rocks? Yes, without adopting any artificial means to catch them.

477. Will you be so good as to give us your opinion as to the propriety of licensing persons on rivers—rivers of course not under lease, so as not to interfere with private rights—to collect oysters from the rocks and to sell them to those who have suitable ground to put them on. In this way those persons who are now stealing oysters in the Parramatta River might have remunerative employment? If you ask my advice, I think you might license a great number of persons to get these oysters from certain places as far up as Ball's Head, Lane Cove River, and the upper part of the Parramatta River. There are a number of small families who would make a good living at it; none of the big buyers would have anything to do with it.

478. Supposing every oyster on the banks of the rivers were knocked off annually, so that not one remained, would not that interfere with the trade? Not unless they were destroyed.

479. But don't you think the whole of the spat on the banks comes from the oysters in the middle of the river—in the deep water? Why should not it come from those on the rocks, where we know there are oysters spawning?

480. Well, if you ask me the question, I should say because these oysters do not come to maturity? There are as fine oysters as you could wish to see on the rocks.

481. Even those that are dry and above low-water-mark? Yes; on Mr. Josephson's property there is a high corner at Waterview Bay where there are some extraordinarily fine oysters, and as well-flavoured as you could desire. Mr. Josephson sold about 400 bags of them a little while ago—a large crop for his little bit of beach; there is no great extent of it, not more than a mile or a mile and a half.

482. *Hon. J. B. Wilson.*] That is at Lane Cove? Yes, Lane Cove; it is not his own property.

483. *Chairman.*] Do you think the plan of licensing men to collect oysters from the rocks, in the same way that timber-cutters are licensed, would be attended with any risk of stealing? No, I don't think there would be any greater risk; if they want to steal them they will steal them; they are doing it now without a license; if they had a license I should say they would not have the same inducement to steal. I think something should be done either by license or lease on the Parramatta River.

484. *Mr. Farnell.*] Would you give the men license to knock off oysters in front of private property? Well, it is almost all private property. If they don't go in front of private property where are they to go? I can't see any objection; if the owner thinks he has a right to it, of course it is a matter for the Government to decide.

485. *Hon. J. B. Wilson.*] You have stated that you considered it advisable to have a law prohibiting the sale of small oysters—Is there any particular age to which you would limit the oyster? You cannot tell by the age of the oysters; in times of drought they will remain stationary for six or eight or even twelve months, and all of a sudden they will spring out and grow more in three months than they have done during eighteen or twenty-four months previously.

486. Can you not tell the age of an oyster by the shell pretty nearly? Yes, I can pick up an oyster and tell its age by the shell.

487. Do you think it would be advisable to determine by legislation that no oysters should be sold under four years of age? No; there are plenty of places where oysters are full-grown at eighteen months.

488. *Mr. Farnell.*] Some oysters then become eatable at eighteen months? Yes.

489. Do you know at what age the oyster spawns? I do not. All the knowledge I possess on the subject is from reading; I believe they spawn at three years of age, but I cannot say whether that is correct or not.

490. Do you think it desirable to sell oysters until you have had one spawning season from them? If there were a great quantity of oysters in a river it might be desirable to get rid of a number of them; but if there were a scarcity it would be advisable to keep the oysters and let them spawn. If there are more oysters than the beds will feed it is advisable to get rid of some of them, the same as with cattle on a run.

491. Should not we be more likely to perpetuate the oyster by insisting, by law, that no oysters should be sold until they had had at least one spawning season? I cannot see how you could prove whether they had spawned or not. If you want to increase the number of oysters, of course it would be advisable to let them spawn first—most undoubtedly it would.

492. *Chairman.*] Have you any idea what percentage of oysters from a bed spawn. Supposing there were one million oysters on a bed, have you any idea how many out of the million would spawn in the course of the year? I have not.

493. Do you think there would be more than 10 per cent.? I really cannot answer you.

494. When you have been dredging oysters and have found some of them spawning, what proportion have been in a spawning state—can you form any idea? I don't believe any man in the world could tell whether an oyster was spawning by lifting it up.

495. *Hon. J. B. Wilson.*] Can you tell how many oysters in a bed are in the same state? I believe they would all be in the same state.

496. *Chairman.*] It is said in England that not more than 10 per cent. are spawning at the same time? I am not able to answer that question.

497. *Hon. J. B. Wilson.*] Do you think, as a rule, that the lessees are careful not to deteriorate the beds? Yes, I could show you that we have very strict rules. Our men never take anything away except the oysters—they throw everything over; they are not allowed to carry away an ounce weight of anything.

498. But do you put anything down to replace or improve the beds? No, but we don't take anything away.

499. Supposing a flood comes down and a large quantity of mud settles on the bed and diminishes its power of catching spat? But the mud does not remain on the oyster beds. I have been over many of them, and I find that the natural beds are a hard substance like marl.

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500. And you do not think it necessary to add to these beds by putting down dead oyster shells for instance from the banks? No, I do not think so. I heard you ask Mr. Clarke a question about dead oyster shells. The oysters at the bottom die and the young ones keep growing on the top and the bed keeps increasing. I have seen beds of great thickness which are formed in this way on the Manning and other rivers.

501. *Mr. Farnell.*] Do you know anything in respect to the longevity of the oyster? No, I do not.

502. *Chairman.*] What is the thickest oyster shell you have ever seen—have you ever seen one 2 inches thick? No.

MONDAY, 13 NOVEMBER, 1876.

Present:—

HON. J. B. WILSON,

J. S. FARNELL, Esq.

THE HON. THOMAS HOLT, M.L.C., IN THE CHAIR.

Mr. Peter James called in and examined; Mr. Bell, another witness, being present, by permission:—

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503. *Chairman.*] You are aware, I presume, that the Government have appointed us a Commission to inquire into the best mode of artificially cultivating oysters and utilizing them, and of maintaining and improving the natural beds? Yes.

504. You are an oyster merchant in Sydney, I believe? Yes.

505. Have you been engaged in the business for many years? About eighteen or nineteen years.

506. Have you had any experience in Europe in the oyster trade? Not very much in Europe in respect to oysters, but I have had a good deal of experience in fish both in England and Ireland, and in Scotland as well. During that time I was sometimes among oysters a very little.

507. And you are now a lessee of oyster beds belonging to the Government of this Colony? Yes.

508. You are not a proprietor as well? No.

509. Do you breed any oysters? No, we have not bred any yet; we have tried a good deal of it once at Balmain, but we have not succeeded as yet.

510. Do you mean that you have tried breeding or fattening? Well, we have not succeeded in fattening.

511. By breeding I mean securing the spat and laying them down in suitable ground? We have never tried any artificial means of securing the spat.

512. But you have placed young oysters on beds in the Parramatta River to grow and fatten? Yes.

513. And don't you find it succeed,—do they not grow? No. We have tried it; we have separated the young oysters from the large ones and kept them there for two years, but we have never seen any difference in them.

514. Do they keep alive? Some of them, but not more than 10 per cent. of them lived.

515. About 90 per cent. died? Very nearly that.

516. What was the cause of their dying? Well, we have not had sufficient experience in our beds to know what it was. We laid down battens with boards across them, and laid the oysters down on that so that the mud might not smother them; but they died just as fast; we found most of them dead on the bottom.

517. What was the character of the soil on which you laid them; was it sand? There was a little sand; it was pretty hard,—gritty white sand with a little shell mixed with it.

518. Do you know that kind of mud which is universally known as London clay? I cannot say I do.

519. Do you know a description of mud which is soft to the touch, almost of the same consistency as soft soap? Yes, greasy and buttery.

520. Well, that is known as the London clay—was it on clay like that that you laid the oysters? Some of them, but most of them were laid on a hard sandy bottom. You see the ground is patchy; there are patches of white sand, and then you get a bit of soft mud; the patches of mud are near low-water-mark, but there is not much of it.

521. But you never tried the experiment of laying oysters on that soft mud? No, not on that mud particularly.

522. You have laid them all on the sand? Well, it is more like gravel than sand at the point at Balmain—rock, and little pebbles—and we have succeeded best at the point. I laid down thirty-six bags of oysters there one season, and I took up next season, I think, twenty-nine bags; that was the only success I had.

523. *Hon. J. B. Wilson.*] Had they improved much during that time? Yes, they had improved both in size and quality; but when we tried a little further in near the point we had no success at all; the oysters would grow perhaps half-an-inch or so, but they did not fill or shell up. We could see them a month or two after we laid them down, and they had shot out a little, but they never got further.

524. But are you not aware that that coincides with the experience of English cultivators—that oysters will never grow or fatten on sand? Yes, because the sand gets into them and chokes them; but here we never find any sand in them.

525. But we find, according to the evidence of witnesses before a Select Committee of the House of Commons this year, that they will neither thrive nor even live where there is sand, and Frank Buckland attributes this to the fact that particles of sand get into the mouth of the oyster when it is opened, and as they cannot reject the sand it kills them? We could not find many of our oysters with sand in them; in fact there are plenty of what are called sandy bottoms with very little loose or drift sand upon them. The bar bed on the Manning now is completely swept away—sanded up—but in a few years time it will be cleared away and oysters will settle there again.

526. On what rivers do you lease oyster beds? Camden Haven, the Clarence River, Port Stephens, the Manning River, Cape Hawke, and Port Macquarie.

527. Where do you get the best oysters? We reckon that the best oysters are from the Manning River and Camden Haven, but the largest quantity comes out of the Clarence River; we find them breed best there.

528. Are there many very poor oysters brought into the Sydney market for sale? There are a great many

many poor oysters after spawning time. On the Clarence River they generally spawn in the winter, but Mr. P. James, last season was an exception, and we got fat oysters from the Clarence all the winter.

529. Those were aged oysters I suppose—sufficiently matured to be sent to market? Yes, as fat as I 13 Nov., 1876. have ever seen them.

530. Full-grown oysters, not young ones? Yes, full-grown.

531. Of what age do you think? About four, between three and four years.

532. Don't you think that no oysters ought to be brought to Sydney for consumption until they are full-grown, that is to say four years old? I don't think they ought to be, but still they are.

533. You think there are a number of young oysters brought to Sydney? There is no doubt of it.

534. There cannot be much nourishment in them? Some of them are very good, but of course if you wish to increase the beds tenfold you should keep them. Still I believe there is plenty of nourishment in them and they are fat enough.

535. Are there not plenty of small oysters which are mere skin and water? After spawning, that always sickens them.

536. Are not many of those oysters brought to Sydney for sale? No, we don't find a market for them when they are in that state.

537. But are there not many of these mere skin and water oysters sold in Sydney? No, I don't think there are many of them; the trade will not buy oysters that are not fit to eat. When they are skin and water we leave them where they are; we don't fetch them in because the shopkeepers won't buy them.

538. What are the sizes of full-grown oysters in this country? They vary very much in size. Those from the Clarence River are very small.

539. Would they pass through a 3-inch ring? Yes, easily enough.

540. Would they pass through a 2½-inch ring? Yes, nine-tenths of them would; they would almost go through a 2-inch ring.

541. Do you think it desirable that there should be some limit in respect to the size of oysters offered for sale in Sydney? I cannot see how it could be done.

542. You are aware that in England the Corporations have power by their by-laws to make regulations which have the force of law in respect to the size of oysters; and that the usual limit is 2½ inches; none smaller than that are allowed to be sold. That does not apply to natives? They are not the same sort of oysters that we have here; ours never reach the size of the English oysters.

543. Have you not seen as large oysters here as you have seen in England? No, except the mud oysters, and I have seen larger in England; I have seen some from the Isle of Man that you would have to cut into four or five pieces before you could eat them.

544. But you have seen some large mud oysters from the rivers of this country? Yes, but not so large as those I have seen in England.

545. The mud oysters are you think a distinct species, quite different from the drift or rock oysters? No doubt of it, altogether a different class of oysters.

546. We have had exhibited on this table some very small oysters in which there could be very little nourishment. Now, is it desirable in your opinion that in any new Oyster Bill some provision should be made to put a stop to the sale of these very young oysters? They certainly ought not to be sold, but it would be a very critical job to define the size.

547. What mode of prevention would you suggest? I am sure I cannot tell without taking time to consider.

548. You say that nine-tenths of the oysters from the Clarence River would go through a 2½-inch ring. Now supposing it were decided to have a gauge, what size would you suggest for that river? I think you would have to make a gauge for each river.

549. Now you are a practical man. Will you suggest to the Commissioners the sizes which would apply to the rivers you know? I do not think, after mature consideration, that any gauge could be adopted—even a separate gauge for each river—as the oysters vary so much both in size and shape in the same river.

550. Are there not a great many very small oysters not fit to be served to customers, which are chopped up for bottling? No doubt of it in the world.

551. Well, don't you think, even supposing that these oysters are not actually unwholesome, it is almost an affront to the public to sell oysters which have so little nourishment in them, which are mere skin and water? Well, I suppose it is; but there are not so many that are skin and water. You are laying too much stress on that, because there are plenty of small oysters that are full of meat. It is not the size of the oysters you must look at, but the time when they are taken out. Still the small oysters would grow four times the size if they were left alone.

552. Now Frank Buckland, who is perhaps one of the greatest authorities on oysters in the world, says that the sale of these very small oysters ought to be prohibited, because they are unfit for food? Well, I should not consider them so.

553. But you think it desirable that there should be some legislation on the subject, to prevent the sale of very small oysters? I do.

554. Have you formed any opinion with respect to the spawning of oysters? Well, the only opinion I have formed is that we have a great deal to learn on the subject. We see them spawning in November in some rivers—at Port Stephens for instance. Then again, we sometimes see oysters all through the season so poor that they are not likely to spawn at all, while in other places they are fat and perfectly fit to be eaten.

555. You think that spawning is going on in certain oyster beds all the year round? I believe there are a certain portion spawning all the year round.

556. Hon. J. B. Wilson.] In the same rivers? Yes, in the same rivers.

557. Chairman.] Now when this spawning is going on, there are always some oysters not spawning on the same river? Yes, there are still places where good fat marketable oysters are to be had all the time the others are spawning.

558. Have you any idea what percentage of spawning oysters there are in a river or a bed—10 per cent. or 2 per cent.? I should say there are sometimes 50 per cent. spawning together.

559. Do you mean in one river or in one bed? In one bed of a river.

560. Not in the whole river? No.

561. And there are other parts of the river where there is no spawning going on? Yes.

- Mr. P. James. 562. Where nearly the whole of the oysters are good for food? Yes, and fit for any market.
- 13 Nov., 1876. 563. Then do you see any necessity for a close season? I cannot see how it could be done.
564. It is done in England, and we wish to know whether you consider it desirable in this country to close the rivers for a certain period in the year? I do not think it is.
565. You think that good oysters can be had at all times during the year, just the same as good beef and mutton? I do indeed, sir—that is my opinion.
566. And that therefore there is no more necessity for a close season for oysters than there is for sheep and cattle? I don't see that there is.
567. Can you always discover when an oyster is sick or about to spawn? Yes, we can always discover it, for a very simple reason. If you simply touch them with your finger the milk or spawn comes from them.
568. Then, if by chance an oyster-opener were to open an oyster in that state, he would throw it aside, and not make use of it for food? I am afraid he would.
569. Do you think these oysters are wholesome food? Well, I don't like them myself, but a great many people do.
570. *Hon. J. B. Wilson.*] That is to say, up to the actual time of spawning? Yes, they like them up to the very moment they spawn.
571. *Chairman.*] Have you formed any theory with regard to the number of young oysters that a female oyster will produce at one birth? No, sir, I have never gone into the matter at all.
572. You do not know whether they are male or female, or hermaphrodites? Well, I am pretty certain myself that every thing in the world is male and female.
573. You have never considered it necessary, in consequence of the abundance of oysters, to take any pains to secure the spat? No, not to go to any expense about it, because there is plenty of spat to be had without.
574. Now, with respect to the rivers you lease from the Government, of which you say there are six; are the banks of rock or mud chiefly? Well, they are both rock and mud.
575. Where there are rocks is there much oyster spat sticking to them? Not so much; but we find, at Port Stephens for instance, mud islands, where there is a lot of little reeds sticking out of the water, and from them you can collect as much spat as you want.
576. You find they stick to the mangroves also? Yes, they stick to the mangroves and to these small reeds, and they grow in lumps there.
577. The supply is almost inexhaustible? Yes.
578. And, if not collected they go to waste? No, because at a certain season we do collect them; that is to say we select the largest among them; of course a good many go to waste.
579. Do you think they come to perfection there? Some of them do.
580. Those that are near the water and get the most of the tide? Yes.
581. Those that are high up on the rocks or mangroves do not come to perfection? Some of them do, but they mostly stick too close together and hinder each other from growing.
582. But if removed, and put on good fattening ground, would they not produce an immense quantity of good oysters? Well, I could not say for certain. We have now laid down 4,000 or 5,000 bags at Port Stephens, and we are waiting to see the result. We have never succeeded yet in any one place.
583. *Hon. J. B. Wilson.*] How long is it since you laid those oysters down? About twelve months.
584. And how long do you intend to leave them there? My intention was to leave them there for another two years.
585. *Chairman.*] How old were they when you laid them down? Some of them I should say were about two years old; and some of them were complete spat, about the size of your nail, about from three to six months old.
586. You have told us, that when about three or four years old they become perfect; ought these oysters not to be left till they reach that age? Some of them will be four years old then, and will have come to perfection if we have laid them on beds where they will grow. We have laid them on places where we know good oysters have been found, but whether it will suit them or not we cannot tell. Of course we have to lay them down when the place is covered with water, and in spreading them over the ground we cannot tell what is the nature of the soil on which they are placed.
587. Have you ever noticed the countless millions of oysters sticking on to the rocks in Port Jackson? Yes.
588. If they were removed and placed on good fattening ground, would not they produce an enormous quantity of good oysters? I have no doubt of it, if you could find suitable ground, and it could be made to pay.
589. Well, with regard to the price, that would be a question for the proprietor or lessee to consider. There would be very little expense in knocking them off the rocks and very little expense in planting them in suitable places, and therefore a reasonable price would pay any one? If you were sure of getting all these oysters back again that you laid down, of course it would pay; that is what we want to know—we have never seen it done yet, and we cannot tell whether it will answer; we want to see the oysters grow to their proper size.
590. But don't you know that London is principally supplied with oysters grown in that way, by collecting spat and laying them down on good ground; that it is as well known in England what is good fattening ground as it is known what ground is good to fatten sheep and cattle on? Then we want that experience here, I am sure.
591. What do you think of the climate of this country for the cultivation of oysters? I believe this climate is more suitable than the English climate. I believe they will come to maturity faster, and that there will be more of them.
592. Are you not aware that the great difficulty in England is in securing the spat—that sometimes for ten, twelve, and even fifteen years, the whole of the spat has been destroyed by severe frosts and stormy weather; and Frank Buckland says that unless they can get tranquillity and a temperature between 65° and 72° they lose almost the whole of it? I believe the frost will kill the spat; it even kills the oysters when they lay out on the ground.
593. Well, the great difficulty in England is in catching the spat, and they are now getting spat from France, where the seasons are much better for growing. Now, here, we have a superabundance of this spat, and it is going to waste; the only difficulty is in the fattening? That is all.

594. Then if we have as good fattening ground as they have in England, may not New South Wales become one of the largest oyster-producing countries in the world? I see no reason to prevent it. Mr. P. James.

595. Do you not think that oysters are a commodity worth cultivating, seeing that in Baltimore, in America, they have an export of oysters equal to the export of meat and wool from this country six or eight years ago? I have no doubt it is well worth looking after, if we can only find suitable ground to lay the oysters on; that is the difficulty. 13 Nov., 1876.

596. It is well known what the suitable ground is, because wherever what is known as London clay, of which there is abundance in this country, is found, the oysters will do well; there are the insects found upon which the oyster loves to fatten? Yes.

597. I am going to ask you a question, but you need not answer it if it affects your interests. I should like to have your candid opinion as to whether it is expedient and good policy on the part of the Government to lease such large blocks on the rivers, or whether it would be desirable to lease the rivers in smaller areas? I believe you will get far more oysters by leasing them in large blocks, for many years to come, than you would by dividing them into small blocks, and the longer the term of lease the more people will be induced to go into the business.

598. I am only speaking now of the size of the areas. Instead of leasing the whole of a river in one block, don't you think it would be good policy to divide the river into several blocks, so that there would be a number of lessees, instead of a few having the monopoly of the rivers as at present. You need not answer the question unless you like? I see no reason for withholding my answer. I think it is far better to lease a river to one person than to cut it up into blocks.

599. You do not think it desirable then to make any change in that respect? I do not think so, and that is my candid opinion; I have no interest to serve in giving it.

600. Have you any idea how many oysters can be placed upon one acre of ground for fattening? A great many can be spread on one acre.

601. Should you think one million too many? I should not think it was; but it would all depend upon the richness of the ground, just the same as cattle runs. Some ground would fatten half a dozen cattle where other ground would not fatten one. Certain creeks will fatten oysters and others will not.

602. In England there are oyster merchants who have only about 4 or 5 acres of fattening ground, which have belonged to their families for centuries, and which yield very handsome returns. Now, if the Government were to decide upon leasing them for long periods, don't you think that small blocks—seeing that one acre will fatten a million oysters—could be leased to advantage? If you could find suitable ground, and there were plenty of it, they might, but as I cannot speak to that I cannot answer the question.

603. Do you see any objection to the Government granting licenses to persons to take oysters off the rocks and mangroves, in order to sell them to those who have what are termed "layings" or laying grounds for fattening? No, I don't see any objection to the taking them off the rocks, where we never look for them at present.

604. These oysters are at present going to waste, and they do not come to a good size? Not all of them going to waste, because when they come to a proper size we take them and send them to market.

605. Are not these very small oysters, such as we have seen on this table, which are sent to Sydney, most of them mere skin and water? No, I do not think so; some of them are as fat as any others.

606. Not those which are high up on the rocks? Of course they are not so fat.

607. Do they ever become fat? I have not had experience enough to answer that question.

608. Would not remunerative employment be found for a number of persons if the Government were to issue licenses, in the same way as timber licenses are issued, to persons who would collect these young oysters from the rocks and sell them? If you could find good ground to fatten the oysters I have no doubt it would in some few years time, but at present I don't think so. We want first to find out the proper places to put them on.

609. *Hon. J. B. Wilson.*] Supposing that your beds at Port Stephens, at the end of three years, were to turn out good, fat, marketable oysters, would you then have any objection to buy spat? We have plenty there that we can utilize if we find it answer.

610. But you have to collect it, and to pay for the collection, have you not? Yes.

611. Therefore you would be able to pay these licensed persons for collecting it? Oh, yes, when we found it answer we should have no objection to pay the expense of collecting it.

612. *Chairman.*] Are there any mud flats on the rivers you lease? I have no doubt there are.

613. Have you any idea of the nature of them? We have never looked for them; that is just the fact of the matter.

614. Don't you think a great many of the oysters that grow on the rocks and mangroves could be laid down with great advantage on these mud flats? Well, sir, you ought to be the best judge of that.

615. Yes, but I am putting the question to you. Have you had any experience of them? No, I have not. I still believe that there are places, if we could find them, on which all these oysters might be put, but we want to know a great deal more about them before we can manage to plant them so as to make it pay us.

616. I told you at the commencement that the object of the Government in appointing this Commission was to obtain that information? Yes. Then I would suggest to you that it would be better to get hold of some of our best oystermen, men who have had experience in dredging these rivers; they know what soil they lift the oysters from, and they can give you far better information than we can.

617. Now, with respect to the stealing of oysters, do you think that in any new Bill provision should be made to protect the lessee or proprietor? Well, it would be quite necessary, if you could find out how to do it.

618. Is it desirable to make some such provision as is made to prevent cattle-stealing—both in the Cattle-slaughtering Bill and the Droving Bill. There must be a license for slaughtering, and the drover is required to produce a pass, and so on. Do you think it desirable to introduce in any new Bill some similar provision to prevent oyster-stealing? Yes, if it could be done, but I can't see how it could be done.

619. It would effectually put a stop to oyster-stealing? I think it might. Of course the oysters from any of the leased rivers can only be sent to the market by some vessel, and if a man had a certificate that he had obtained his oysters from us, there would be an end of it at once; no other person could fetch those oysters away except the man who had the certificate.

- Mr. P. James. 620. *Hon. J. B. Wilson.*] You have stated to us that you have laid down a number of young oysters on the natural beds which you have leased from the Government? Yes.
- 13 Nov., 1876 621. Have you taken any steps to improve those beds? No.
622. Do you think if they had longer leases, the lessees would go to any expense to improve their beds? Yes, I think so. We have put ourselves to the expense of perhaps £200 in laying down these oysters, and we know they will not come to maturity for three or four years. If we take them up then we might ruin the bed, while if we left them for another four years they might give us a good return.
623. For what length of time do you think these areas ought to be leased? I think they should be leased for a certain time, with the right of renewal if the leased areas were found in good condition.
624. But without that right of renewal, what period do you think would be a fair thing? About thirty years, to induce people to lay out their money in improving the beds.
625. And do you think that if they got thirty years leases the lessees would object to any stringent regulations that at the end of that time they should give up the beds in a fair average working state—say the average condition of the previous five years? I cannot see why they should object; I don't think any reasonable man would object.
626. If the leases were for thirty years, do you think a condition like that would be reasonable? I think it would; still it would be a greater inducement if the Government were to give, upon a valuation of the river to show that it was improved, the right to a renewal of the lease.
627. Do you think if the Government gave a long lease to the portions of the rivers or estuaries that at present are not oyster-beds, people would be induced to try and form oyster-beds in them? No, not under present circumstances.
628. You think that depends upon the success of the experiments that are being made? Yes.
629. Don't you think—seeing that Mr. Holt is turning out such fine oysters—that they would be induced to follow his example? I should be very glad to see Mr. Holt's oyster beds and to gain what experience I could from him; we want a great deal of experience in this country yet. There is no doubt plenty of persons would follow his example if they could see their way clear.
630. In that way you would be able to keep up the supply, whatever the consumption might be? Yes.
631. And if the local demand was not equal to the supply, oysters would be preserved and become an article of export? Yes; I believe there would be plenty of persons who would preserve them.
632. Are you aware that almost all the gold-field towns in this Colony are supplied with American preserved oysters? Yes; I know a great quantity of them come in.
633. Do you know the value annually of the export of oysters from the town of Baltimore in America? I do not.
634. It is very large? So I have heard.
635. It amounts to two millions sterling per annum? We have some splendid oysters here, but they have been slaughtered in this country, there is no doubt of it. We have a great quantity of oysters at Cape Hawke, because that has had a ten years' rest. It is to our interest to get good oysters, and we must get them good.
636. Is that bed at Cape Hawke greatly improved? Yes, since we have had it. We could take 5,000 bags of marketable oysters from it now without hurting it.
637. That is the bed called Wallace Lake, is it not? Yes.
638. Have you laid down any oysters there? None at all—that is the natural increase of the bed itself; It is nearly ten years since it was drained out, and it has taken all that time to recover.
639. Was it closed by the Government before you took it? No, I think not. The Clyde River before it was leased by the Government was completely cleaned out—there was not a shell left on the bottom for the oysters to stick to.
640. Can you refresh your memory sufficiently to say how long it is since you leased the Wallace Lake. My object in asking the question is to see how many years it has taken to improve; I don't think you have had it in your possession for ten years? No, that is not the time we have had it to preserve; that is the time since it was cleaned out.
641. Can you recollect the number of years you have had it? Somewhere about three years.
642. Have you the Clyde River at present? No, Mr. Gibbins has the Clyde River.
643. Are you aware whether they are improving there now or not? I do not know; it takes a long time when a river is cleaned out.
644. *Mr. Farnell.*] Speaking of this place at Balmain, do you think it a suitable place for improving or fattening oysters? I don't think it is.
645. Don't you use it more as a place for storing oysters previous to bringing them into market? Certainly, to some extent.
646. Is it not very limited in area? It is rather limited.
647. The beach I think is not very extensive? No.
648. What is the whole area, do you think, at Balmain—You have enclosed it, have you not? No, we have only a place where we store the oysters for a time. Then when we get any in the winter which are not fat we sometimes lay them down there, but we never find them improve.
649. Is not the bottom rather rocky at Balmain? Yes, above low-water-mark.
650. And what beach there is is rather of a sandy nature? It is sandy below low-water-mark, but from the rocky point up to our shed it is simply gravel; it is when you get to the other side of our shed again that you find sand, but it is on the point we find that we can fatten oysters best.
651. The Chairman said something to you about London clay—Do you know of your own knowledge whether we have any of that clay here? No, I have never taken notice of it.
652. Do you think that the oystermen and others employed in dredging oysters could give us any information as to the character of the soil or clay in the various rivers? I believe if you give them time they would do it, but you would have to insist into them what you want. When they dredge for oysters they take up a portion of the soil at the same time, and they could save specimens of it for you to examine if you wished.
653. Some of them have been dredging in these rivers for many years, have they not? Yes; we have a man named Fraser who has been dredging nearly all his life.
654. You are aware, I presume, from your own experience, that soft mud or raw sand is not suitable for the cultivation of young oysters? Of course, I am well aware of that, because it smothers them.

655. You are aware also that there is a kind of oyster that thrives best in mud? Yes, some oysters succeed well in mud. I have heard of Cork Harbour turning out the best oysters, where the sewage from the town ran right through the harbour, but they are not the class of oysters we have here. Mr. P. James.
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656. Is not it necessary to the successful cultivation of oysters that there should be some fresh water flowing into the beds at times? I believe they always fatten best where there is a certain portion of fresh water coming into the bed, but where there is too much fresh water the oysters are insipid in taste.

657. Do you know what the oyster feeds upon? I do not.

658. Now, speaking of small oysters such as the Chairman referred to as passing through a ring, notwithstanding that they are sometimes small they are still eatable? Yes, I think some of our oysters that would go through a ring a little over an inch diameter would be found very good and eatable.

659. And we have different kinds of oysters—large and small kinds? Yes, and we have oysters that are more cupped than others, that would pass through a 2½-inch ring,—or even a 1½-inch, and yet would have as much meat in them as some that would only go through a 3-inch ring.

660. Do you think there would be any difficulty in legislating so as to fix the age of the oyster as the test of its fitness for sale, rather than its size? I do not see how you could do it.

661. Then supposing the age could not be fixed, is it your opinion that oysters should be classified and passed through rings of various sizes? It would be rather a difficult thing to do. I cannot see how you would do it.

662. It would not do to have one general gauge for all the oysters from the various rivers? No.

663. Then would it not be possible to provide a different gauge for oysters out of different rivers? Well, I am afraid it would be hardly possible to do that, and you certainly could not fix upon one standard.

664. For instance, you might fix the gauge for the Clarence River at 2 inches; the Manning River, 2½ inches; and any other rivers, where the oysters were larger, at 3 inches; and 1½ for rock oysters, as the case might be? It might perhaps be done.

665. That you think would be the practical way of doing it? That would be the way if you did it by a ring at all. Even in the Manning River, for instance, there are oysters which grow to a large size; then again there are rock oysters, which are never anything but rock oysters, which you would have to legislate for; so that you could never adopt one gauge for all the rivers.

666. You are aware that the Government closed a number of the rivers some years ago? Yes.

667. Since the closing of those rivers, and up to the time of their leasing, a great many oysters have been taken out of them? A great many were taken while they were closed—almost as many as there were before.

668. For the want of persons to look after them? Yes.

669. Many of these rivers have been leased since? Yes.

670. And have they improved in productiveness since they were leased? Some of them; the Manning River has not; we are getting nothing off it, and we are not dredging it to any extent. It was completely cleaned out when it was leased; all the oysters, young and old, were taken out promiscuously during the time it was closed.

671. At what age do you consider that the oyster becomes eatable? Some grow much quicker than others; you might eat some at two years. I should say, on an average from three to four years they are about the best eating.

672. Do you know at what age the oyster first spawns—that is to say, when reproduction takes place? I do not; it is a matter I have never studied.

673. I think you stated that there were eatable oysters all the year round? Yes.

674. Notwithstanding the spawning season? Yes.

675. And that oysters in the same bed do not spawn at the same time? Yes.

676. And that oysters in this country generally spawn all the year round? There are certain places where oysters are spawning all the year round. Last year was an exception on the Clarence River. We got them fat all through the winter, while the year before we closed the river ourselves because the oysters were not fit to send to market.

677. Do you think it would be wise to legislate so as to give the Government power—notwithstanding that these natural beds might be leased to different persons—to close the rivers during the known periods in which the oysters are spawning; say, during the months of March and April? I do not see that it would be any good for the Government to do that. I cannot see how the Government could fix the spawning time.

678. I suppose you are aware that it is quite possible to annihilate the oysters altogether? I am quite aware of it.

679. Then, if some precaution be not taken to preserve them, the result will be that all the beds will be destroyed? I think it ought to be left to the lessees themselves; it is not to their interest to ruin the beds. If the oysters are not fit for market they will not take them. When they have spawned they are simply in a condition in which no one will buy them.

680. Then you think that if the Government gave the lessees long leases, in order to encourage them, they would take care that sufficient time was allowed for the oysters to reproduce themselves? Yes, I think self-interest would prompt them to do so; they are doing it at the present time.

681. And you are clearly of opinion that, in order to encourage persons to cultivate oysters and to perpetuate the present natural beds, it is necessary to give them leases for not less than thirty years? Yes, I think nothing less will induce people to risk their money on them to any extent. We have laid down 5,000 bags, and we have to wait about three years before we know whether it will answer our purpose, and by that time there will not be very much time left for us out of the present lease.

682. Do you think it would be wise on the part of the Government to lease the foreshore or such portions of the sea coast, or any part of a river, for a long term at a nominal rent in order to encourage cultivation? I do think so; I think it would be good policy.

683. You see these oysters on the table? Yes.

684. How many years have you been engaged in the trade? About eighteen years.

685. Do you remember some years ago that nearly the whole of the Sydney market was supplied from the Parramatta River, and with that kind of oyster? I remember that a great many came from the Parramatta River.

- Mr. P. James. 686. Are you aware that those beds were worked out at that time by over-dredging? Yes, but as far as I can see, these mud oysters can be dredged and annihilated much sooner than the rock oysters. I notice that in Victoria they are almost altogether annihilated from over-dredging.
- 13 Nov., 1876. 687. Are you aware that the oyster does not thrive so well near the sea coast where the water is very salt? I know that the nearer the coast the smaller the oyster is.
688. For instance, you do not get as good oysters down at Shark Island and in the bay as you do up the river? No; in the bed where we are dredging them now the water is very fresh, and if we take these same oysters and put them down at Balmain they die at once; I have had 160 bags of oysters die there in one week from the change from fresh to salt water. You could come every day and see them open their mouths and die. One year we lost about 700 bags of them over at Balmain.
689. Do you know as a fact that there are any oysters of that kind in the Parramatta River now? There are some odd ones, I believe.
690. You do not know whether that bed has resuscitated itself since? I do not know that it has.
691. Do you export oysters? Yes, of course we export the most of ours.
692. Where do you send them to? To Melbourne.
693. Does Queensland send many oysters to Sydney? A great many lately.
694. Are they superior or inferior to ours? Last year they were superior, but this year we shall beat them again.
695. What is the reason of that, do you know; is it because of the drought? No, I think they have over-dredged their beds.
696. And New Zealand also produces some oysters? Yes, but not many come here.

Mr. Henry Wallace Bell next examined:—

- Mr. H. W. Bell. 697. *Chairman.*] You are aware that the object of this Commission is to obtain information as to the best mode of cultivating and utilizing the oyster in this country, and of improving and maintaining the natural beds? Yes.
- 13 Nov., 1876. 698. We shall be obliged to you for any information you can give us. You are an oyster merchant in Sydney, I believe? Yes.
699. Have you been many years in business in Sydney? Yes, for the last ten or twelve years.
700. Have you had any experience in England? A little.
701. In what part of England? In Kent.
702. What was the name of the river? The Whitstable.
703. Were you one of the proprietors? No.
704. But every one born in Whitstable is a proprietor, is he not? No, he must be descended from those to whom the original grant was made.
705. Have you worked on any of the oyster beds on that river, or seen the working of them? Yes; not on the Company's ground, but on the Commons' ground.
706. Are you proprietor or lessee from the Government of any rivers in this Colony? I am interested in the Tuross River and Brow Lake.
707. Have you done anything in the way of breeding or fattening oysters? Nothing more than laying down brood by one party.
708. What do you understand by brood—is it the same as spat? Yes.
709. But in Whitstable they call it spat when it is a year old, brood when it is two years, ware when it is three years, and at four years old it is an oyster and saleable? Yes.
710. Then when you state that you laid down brood, you mean you laid down spat about a year old? Yes, about that; from six months to that age.
711. And what was the result of that experiment—did they grow and fatten well? Yes, at the particular place where we put them down.
712. What was the nature of the soil on which you planted them? It was slightly inclined to mud, but not much, with a mixture of shell and stone.
713. Dead oyster shells? Shells of various kinds and stone.
714. Where was this? On the Tuross River.
715. And they grew and fattened well? Yes, some of them soon became saleable.
716. Then as far as your experience goes it has been a success? Yes, as far as we have tried it. The extent of ground was very limited, or we might have gone on further with it.
717. There must be a great deal more of that kind of ground on the Tuross River? Yes, but it is all liable to floods.
718. The piece you made use of then was an exception? Yes, it was just out of the reach of the flood in what we call the Tuross Lake; it is only a branch of the river.
719. Is it connected with the tidal water? Yes, but it is out of the reach of the debris from the floods.
720. Is it a marsh? No, it is not a lake in reality, but only a branch of the river; but the residents in the neighbourhood call it a lake. It is something similar to the portion which I understand you hold on the George's River—a bight running in from the river.
721. What I wish to understand from you is whether it is possible by artificial means to make a great deal more of that fattening ground for oysters? I think it could be done with safety where there is no liability to floods.
722. Don't you think more branches could be made where oysters could grow and fatten? I can only speak of the Tuross River, where they would all be swept away by the floods.
723. I do not know anything about the banks of the Tuross River? They are very limited.
724. Do you think the rivers that you are acquainted with have been much injured by over-dredging? Yes, greatly so.
725. A great many oysters have been consumed to make lime? I believe large quantities of them have been burnt for lime.
726. Has that been the case on the Tuross River? Yes.
727. How long ago was that? As far as I can learn, some five or six years ago it was a constant practice by some of the residents.

728. Are you aware that there are a great many very small oysters brought into Sydney for sale? Yes, Mr. H. W. Bell.
I have seen some very small ones.
729. What would you call oysters of that kind in Whitstable? Nothing more than brood.
730. Not so good as ware? Not so good as some of the ware.
731. These oysters, if laid down on good ground, would become large and saleable oysters, would they not? Some of them might, but not all; there are some kinds of oysters here that will not improve.
732. Don't you think that the sale of these very small oysters is prejudicial to the trade, even if they are eatable which is the opinion of some? It is no doubt so; still oysters though small may be good.
733. Still, when a person calls for a plate of oysters he likes to have good oysters set before him, and not mere skin and water? That depends upon the condition of the oyster.
734. The object of my question is to ascertain whether you do not consider it desirable that some limit should be fixed by legislation as to the size of the oyster offered for sale? I think so, decidedly.
735. Have you formed any opinion on the subject—Do you think oysters that would pass through a 2-inch or a 2½-inch ring should be prohibited from sale? I should say from 1½-inch to 2 inches.
736. You think that nothing below that size should be sold as human food? I think so.
737. Have you formed any decided opinion as to the spawning of oysters, not only as to the period of spawning, but whether they spawn more or less all the year round? It depends greatly upon the seasons of the year in all beds; there are more spawning in the south than in the north, and I believe they are spawning during the whole of the summer.
738. Are they spawning, do you think, during the winter months? Yes, more or less.
739. Then do you think it desirable that there should be a close season? If you could fix the time.
740. But if they are spawning all the year round, do you not think it desirable that there should be two or more months during which they should not be sold? The difficulty would be to decide upon the proper time; you would have to fix various periods.
741. I wish to know whether you consider it desirable to fix a close season, or whether there are oysters which are wholesome food—those that are not spawning—all the year round? Those that are not spawning are wholesome.
742. Do you know what percentage of oysters spawn, on a bed or river? I believe that all oysters spawn after they arrive at a certain age.
743. Have you ever attempted to catch young oysters by means of piles of stone or wood? No.
744. There is such an abundance of them that you have had no occasion to do so? Yes.
745. Are there many young oysters sticking on to the rocks and mangroves on the Tuross River? The only place is Rocky Point—all the other part of the river is black mud.
746. Is there plenty of spat there? No, it is very scarce.
747. Then if you wished to cultivate on a large scale you would have to import spat or brood? No, there would be sufficient for that, if we could find the ground on which to cultivate them; there are no fore-shores on the Tuross River to any extent.
748. Then the oyster trade can never be carried on there to any extent? No, and I believe it is a fair sample of the rivers, from what I can hear.
749. You have observed how the rocks in the harbour of Port Jackson are plastered over with spat? Yes, frequently.
750. Would it not be an advantage if they were knocked off the rocks carefully and planted on fattening ground? I have no doubt of it.
751. Oysters are most wholesome food, are they not? Yes.
752. Do you see any objection to the Government licensing persons to knock these oysters off the rocks, in order to sell them to those who would lay them down on good ground to grow? You mean to lessees?
753. I am not speaking of leased rivers—some of the rivers are not leased, the Parramatta River for instance; besides, the longest lease is not ten years. It is with respect to the future, not the present policy, that I wish for your opinion? I think it would be very good policy.
754. Don't you think that a number of men, with their wives and families, would find remunerative employment in this way, if they could sell the oysters to persons who have laying or fattening ground? Undoubtedly; there are a great many now doing it by stealth.
755. Do not the oysters which are only reached by the high tides become stunted and soon perish, from their exposure to the hot sun? They become stunted, but I have never known them to perish.
756. Do you not often see only the under shell sticking to the rocks? Yes, but I think those oysters are often destroyed by fresh water—by the change of water.
757. Do you think it would be desirable to introduce into any new Oyster Bill a provision to prevent the stealing of oysters, in the same way that provisions are made in the Slaughtering Act and the Brand Act, to prevent cattle-stealing? Yes, I think it has long been needed. I have seen oysters exhibited in the windows in the shops in Sydney for sale which I knew were stolen.
758. *Mr. Farnell.*] How long have you been engaged in the oyster trade, Mr. Bell? Since 1853.
759. I think you stated to the Chairman that you had not gone into the cultivation of oysters? Not to any extent.
760. Have you made any examination or inquiry with a view to ascertain whether you could obtain fore-shores or ground suitable for the cultivation and fattening of oysters in this Colony? Only in respect to the Tuross River and Broulaka.
761. Then you are not aware whether we have in this country soil or clay such as they have in England suitable to the cultivation and fattening of oysters? I can speak only with regard to those two places, and there the ground is only of a very limited extent. I have seen some good soil on the Parramatta River.
762. Whereabouts was it? In different places.
763. Will you specify one spot? At Kissing Point.
764. That is rather a wide direction? Well, I have been walking along the shore at low water, and going up towards Parramatta from the landing-place have noticed some good ground.
765. Do you know the Flats? I have only seen them from the deck of the steamer.
766. You think there is some suitable clay on the foreshore above the landing? Yes.
767. Now, with regard to knocking oysters off the rocks, do not they fatten on the rocks when they are within a certain limit of low-water-mark? Yes, within a certain limit of low-water-mark; they fatten faster there than they do higher up.

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768. And those that you saw exposed for sale were rock oysters from the Parramatta River? Yes.
769. Were they marketable oysters? They were a mixed sample, large and small.
770. Are not the rock oysters generally as good as the drift oysters from the various rivers—the Clareuce, the Manning River, Camden Haven, and others? Not as a rule.
771. Can you tell the difference? Oh yes; the rock oyster does not attain the thickness of the drift oyster.
772. Do you know the little cup oyster? Yes, well.
773. The oyster that attaches itself to the whelk? Yes.
774. Are they not good? Yes, they are some of the best.
775. Have you had any experience in the cultivation of oysters in England? Only in catching them.
776. Are you aware that mussels are injurious to oyster beds? If they are allowed to grow, but the ground is usually considered good for oysters where the mussel is got in England.
777. But where there are oysters and a large accumulation of mussels, the mussel smothers the oyster? Yes, it grows so much quicker than the oyster.
778. You think it would be advantageous to take these small oysters off the rocks and lay them down in fattening ground, supposing such ground could be obtained? Yes, it would add greatly to the supply.
779. Do you think the oysters from the rocks would improve under those circumstances? Yes, if care were used, and they were not covered with mud.
780. Would they thicken in the same way as oysters taken from the rivers? They would not attain the same thickness, but they would improve.
781. If these poor oysters from the rocks were put on good fattening ground, would they be superior to oysters which have attained perfection on the rocks? No, I don't think they would.
782. Has the oyster spat, after its first emission from the oyster, many enemies? A great many, and the oyster itself has also.
783. What are its enemies? Various kinds of whelk, the borer, the mussel, the star-fish, the sea-egg, and the stingaree.
784. Have you found the whelk an enemy to the oyster in this country? No, but I know it is very numerous in Moreton Bay. In England it is found to be very injurious to the oyster, and I have no doubt it is so here. It is called the dog whelk.
785. Are you speaking of the enemies to the oyster as applicable to England more than to this country? I think they apply to both equally. They would destroy the mud oyster much quicker than the rock oyster, on account of the difference in the hardness of the shell.
786. Have you noticed that the rock oysters are finer on rocks which are perpendicular, and where there is very little foreshore, or perhaps none? No, I have not noticed that.
787. Between high and low water-mark? Yes.
788. Have you ever observed that the best oysters are found in sheltered places? Yes, and where there is a good tide, both ebb and flow.
789. What is your opinion with respect to giving long leases of the natural oyster beds, on condition that they are given up in an improved state? I think it is very desirable.
790. Are you also favourable to the issue of long leases of foreshores or other places suitable to the cultivation of oysters as an encouragement to persons to produce them? I think it would be desirable.
791. Would you lease them in large or small blocks? In large blocks.
792. The beds in our rivers run patchy, I believe, do they not? Very much so.
793. There is no continuation of oyster beds in a river, but one here and one there? Yes, usually just on a point where the rocks lie.
794. The banks of the Tuross River I think you said are alluvial to a large extent? Yes, they are all covered with mud; there are no places suitable for cultivation in that river except just along the foreshore.
795. Have you ever considered the way in which oysters propagate? Each oyster produces its own kind.
796. That is, they are hermaphrodites? Yes.
797. The climate of this Colony generally is favourable, is it not, to the cultivation of oysters? Oh yes.
798. That is to say, the absence of severe winters? Yes; the frost is injurious to them; the rivers here are also sheltered.
799. *Chairman.*] When you left Whitstable were you very young? I was about twenty or twenty-two years of age.
800. Then you have seen a good deal of the oyster business? Yes—the working of that particular Company.
801. Are you aware that they breed only a small portion of the oysters they fatten? Yes, they buy them.
802. They purchase them as brood or ware from various places? Yes.
803. Are you aware that men, women, and children are employed in collecting oysters the size of a three-penny piece, wherever they can get them, to sell to the Company? Only men and lads; I never knew women and children employed in collecting them.
804. At any rate there are a great number of persons engaged in collecting young oysters? Yes, at certain times—at low spring tides.
805. Oysters of any size from a threepenny bit? Any size that will bear removing; the Company allow that privilege on their own grounds; that is to say, it is allowed to their own people, but to no one else.
806. And on the Commons ground? Any one can go there.
807. Are you aware that the Company import brood and ware from Ireland, and also from France? I don't know about France, but I know they do from Ireland and Scotland.
808. It is since you left that they commenced to import from France, last year I believe. Have you any idea of the proportion of oysters that they breed and that they fatten? I think they purchase fully four-fifths. I know that one year they paid £80,000 for brood in the county of Essex.
809. Then if they had not the opportunity of purchasing brood they would not be able to carry on their operations? Certainly not.
810. And London is principally supplied by Whitstable, is it not? Whitstable and other places.
811. But the greater portion comes from Whitstable? Yes.
812. The Whitstable Company are the largest oyster fatteners in the world, I believe, at present? I think so—in Great Britain at any rate; I don't know about America.

813. Have you much knowledge of the Whitstable ground? It is chiefly clayey soil and marl.
 814. Is there not plenty of that soil in this country? There may be; I have not seen it.
 815. Is not the soil in the lake you have been working on something like it? That is shell and stones.
 816. And you say there is clay on the Whitstable ground? Yes, soft clay.
 817. Is there much difference between that and the soil we have here? Yes; I have seen nothing here like the soil we have at Home.
 818. Can you fatten oysters on your lake as well as you could in the Whitstable ground? No, the water is too still; there is no tide.
 819. But supposing you made a canal from the river to the lake, would not that have the effect of producing a tide? That could not be done; the lake, as it is called, is only a bight running a little way in from the river.
 820. *Mr. Farnell.* The ground at Whitstable belongs to a Company? Yes.
 821. Have they a charter? Yes, they have a charter from Queen Anne.
 822. They do not pay any rent? Only a nominal one—a peppercorn rent; the proprietors can buy and sell their interests in it, but no one can purchase the right to the ground—that cannot be sold. I suppose there are some 800 or 900 persons who have an interest in it.

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FRIDAY, 17 NOVEMBER, 1876.

Present:—

HON. J. B. WILSON, | J. S. FARNELL, Esq.

THE HON. THOMAS HOLT, M.L.C., IN THE CHAIR.

Mr. Peter Thomas Johnson called in and examined:—

823. *Chairman.* Are you an oyster merchant in Sydney, Mr. Johnson? Yes.
 824. Have you been many years in the oyster business? Yes, about sixteen years.
 825. Then you have had a great deal of experience? I have, sir.
 826. Have you had any experience in England or in Europe? No, only the experience I have had here.
 827. In this Colony? Yes.
 828. You are a lessee of oyster beds from the Crown, are you not? Yes, at Shoalhaven.
 829. You are not a proprietor—you have not the freehold of any oyster bed? No, only those I have at Shoalhaven.
 830. As lessee? Yes.
 831. Have you been engaged in breeding oysters at all? Yes.
 832. What process do you adopt in breeding them? I shift them and lay them down again.
 833. But that is not breeding. What I mean is, catching the spat and laying them down on suitable ground to grow and fatten? No, I have never tried that, except that I have laid down wood for the spat to adhere to.
 834. Have you been successful in doing so? Yes, with a certain sort of wood.
 835. What sort of wood? Oak, branches of oak.
 836. Were the branches well covered with spat? Yes.
 837. The spat require something solid to stick to? They require something rough.
 838. Is it indispensable that it should be rough? Yes.
 839. Have you never seen spat sticking to a glass bottle? I have, but then you only find them single; if they accumulated and became thick they would all tumble off.
 840. Have you ever seen a glass bottle covered with them? Yes, I have; I have also seen pieces of earthenware and old boots covered with them. I believe I have got the largest sized spat off old boots.
 841. Then your experiments in breeding have been very successful? Yes.
 842. Have you any idea what amount of success you have had—the number of oysters on any branch or number of branches or fascines? No sir, I never took notice of it.
 843. And what do you do with these young oysters? I knock them adrift and shift them about.
 844. That is to say, after knocking them off you lay them down on beds to grow and fatten? Yes.
 845. And how have you succeeded? Very well; they grow very well and very fast.
 846. And become fat? Yes, and better tasted than they would be on their natural bed. I have had as fine oysters as I ever saw nine months after shifting them.
 847. On the Shoalhaven River? On the Shoalhaven.
 848. And what kind of ground did you make use of for that purpose? I had a small 50-acre lease before the rivers were leased.
 849. Was that where you put down the wood for catching the spat? Yes.
 850. Did you not continue it after you leased the river? Oh yes, I am doing it now.
 851. What was the area of the river you leased? 50 acres.
 852. I mean the river you now lease from the Government? I have all below low-water-mark.
 853. Yes, but what is the area of your lease, does it comprise 1,000 acres, 10,000, or what? I could not tell you; I should say the Crookhaven River is about 4 miles in length, and then there is the Shoalhaven, which I believe extends about 12 miles in one place.
 854. That makes 16, and what do you lease besides? There are the bays which are all below that, and the islands.
 855. Then you must have 3,000 or 4,000 acres altogether? I really could not say; there is plenty of barren ground amongst it.
 856. And also a great deal of fruitful ground, is there not? Yes, it is a very good place for growing.
 857. And they fatten well also? Yes, if they are not placed too thick.
 858. Was the whole of the 50 acres you leased at first good fattening ground? No, about half of it; it was too soft and muddy.
 859. But that could be easily remedied, could it not? That is what I put the timber on it for.

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860. And that has answered well? Yes; the best part of the timber sinks into the mud, and that prevents the oysters from sinking. It is only certain wood that they will stick to.
861. Could not a very considerable profit be made out of an area of 50 acres, if you had it as a freehold? No, sir, there could not.
862. In England there are many oyster farms which are not over 5 acres in extent, which have belonged to the same families for generations, and which pay handsomely? Yes, provided you could go to the expense of making stone walls for the oysters to accumulate on; they want a fine hard bottom, with plenty of room to accumulate. 50 acres would be a very small piece; if you took 100 bags off 50 acres it would make a great hole in it.
863. Do you know how many oysters can be spread over an acre of ground, for growing and fattening? I should say about twenty bags of young spawn could be put upon it.
864. How many oysters would there be in a bag? That is more than any one could tell.
865. What do you mean by spawn? Young oysters.
866. That is, under a year old? They are not six months old.
867. Anything under a year old; about 6,000 to the bushel? More than that.
868. How many bags could you plant on 1 acre? About four bags, if they were broken up and spread about among the wood and stone, would make a very good bed.
869. In evidence given before a Select Committee of the House of Commons, it was stated that a million of oysters could be spread upon one acre of ground; you think that is too much? I do sir.
870. But if half, or even a quarter of the number were put down, could not a good deal be done with 50 acres if you had a freehold of it? Well, if I had a freehold of 50 acres I should like to cover it half with oysters and the other half with rubbish.
871. What do you mean by rubbish? Shells and bottles.
872. You would use half of it as growing and fattening ground, and the rest for catching spat? Yes, I should have a wall on each side and the oysters in the middle.
873. Now, even with the present price of oysters, could you not derive a very good income from 50 acres? No, I don't think it would pay a man to work it.
874. Did it not pay you when you worked it? No, I never had the opportunity of trying it much.
875. I should like now to have your opinion on a question of public policy—whether you consider it desirable that the rivers should continue to be leased, as at present, in large blocks; or whether it would not be to the public interest to lease them in small blocks? It might if the rivers were in a fit state to go to work upon; but not as they were when we leased them—completely worked out.
876. But if you had 50 acres it would never be worked out; you would always have plenty of spat? 50 acres would not be enough—it would not be worth working at.
877. How do they manage in England with only 5 acres; I have seen in France thousands of oyster parks, as they are called, which do not measure over 30 yards across? Well, there must be something different in the price of oysters, or else they must grow thicker than they do here.
878. But looking to the public interest, do you think it is expedient for the Government to lease such large areas so many miles in length to a few persons, and to shut out the rest of the population? Yes, I don't see that it would pay to let them in any other way. If the rivers had not been ransacked as they have been it might, but not as they are now.
879. Supposing they were in the state in which you first knew them? When I first knew them there were plenty of oysters, but there were none when I leased them.
880. Well, going back to that time—to the condition the rivers were in when you first knew them, and putting yourself in the place of the Government—how would you deal with these rivers; would you lease them in 50-acre blocks or in blocks comprising thousands of acres? Well, I should say for the present time that a lease of 500 acres—supposing the rivers to be in the condition they were when I first knew them—would pay a man better than the whole of a river at a larger rent.
881. What would you think would be a fair rent—having regard to the public interest? I should say the same as I paid for my first 50-acre lease—£2 a year rent.
882. You think about £20 a year for 500 acres would be a fair rent? Yes, I think it would be a fair rent for a river, considering what has got to be done to it. If you once take oysters off the ground they will never accumulate there again.
883. It was stated by a witness before a Select Committee of the Parliament in Sydney some seven or eight years ago that he thought £2 10s. an acre rent would be a fair rent? Then he must have had to work very hard to keep his bed with oysters on it and to get his money out of it.
884. You would think that rent excessive? I should, sir.
885. Do you think £1 an acre would be too much? I should say so; I think 5s. an acre is too much for ground to keep as an oyster bed.
886. But if you had it for a permanency—unless the Government should require to resume it, when of course you would receive compensation or the value of your improvements—so that it might be transmitted from father to son for generations; in that case would you consider it too much? No, because then a person could build stone walls on it and make it valuable; but now if he were to do that, by the time he had finished the lease would have nearly expired.
887. Then for a permanency, if the rivers were leased—not the whole of a river to one person, but in moderate-sized blocks, and supposing the principle of free selection were adopted the same as with land—what rent do you think would be fair? Every one to pick his own ground?
888. Yes, to pick his own ground? Under those circumstances I should not grudge 10s. an acre.
889. For blocks of 40 acres? No, about 100 acres, if I were allowed to pick my own ground, because then if my improvements did not benefit me they would my family after me.
890. How would it answer to select one portion of the land under water and the other portion above high-water-mark, where you could erect a homestead and out-buildings, or have a farm at which you could work when not employed in your oyster beds? I don't think that would answer, because a man in the oyster business has no time for farming.
891. He would require a homestead? Yes, it would do very well for that, but it would be very hard to get a place to live on anywhere near where the oysters were, and that is where he would want to be.
892. Then this 100 acres could be buoyed off? Yes, or staked or fenced round.
893. Do you know of many such places where land could be obtained so situated as not to interfere with navigation? That I do not.

894. Would the oyster beds we are speaking of interfere with navigation? Yes, you could not get 100 acres in a block without going across the channel.
895. If vessels passed over the ground would they do your oysters any harm? Of course they would: we don't want anything over our oyster beds, and vessels might get aground or lie about and do a great deal of injury; if the place was once made a thoroughfare every one would go over it.
896. But you do not look upon that as an insurmountable obstacle, because in England there must be constantly traffic going on over the oyster beds? Yes, but they are in deep water.
897. And your beds are in shallow water? Yes.
898. Are they dry at low tide? No, they are about 3 feet deep at low water.
899. Then large vessels could not pass there? No.
900. What is the rise and fall of the tide? About 4 feet; there is 7 feet of water at high tide.
901. Is there much traffic there? Yes.
902. Are you alluding to the bed of the Shoalhaven River? Yes.
903. What I wish to know is, whether you could not secure the ground free from any interference, except by such navigation as must necessarily pass over it, because whatever terms might be offered for it, the Government could not alienate any land for purposes which impeded navigation. Could the places you speak of be alienated for long leases without interfering with the traffic at all? I don't think it would be right to let anything go over the oyster-beds at all, because I might find it necessary to run a wall straight across, and when I got to the channel I should be done.
904. That is what I want to know—is it possible to lease oyster-beds without interfering with the traffic? I don't think so.
905. *Hon. J. B. Wilson.*] Are there any bays or inlets where oyster-beds could be laid down, not required for navigation? There are none down my way; we have all the oyster-beds.
906. Are there any places where oyster-beds could be formed—I am not talking of the natural beds, I mean artificial beds—in your neighbourhood? No, I don't think there are, not of that size; I don't believe you could get 50 acres anywhere.
907. Could you get 20 acres? Oh yes, you could get 20 acres alongside the beach.
908. *Chairman.*] Where would be the necessity of getting 50 acres in one block; could not you get 20 acres in one place and 20 or 30 more a little higher up or lower down? How could you look after them if they were in separate places?
909. *Hon. J. B. Wilson.*] Supposing every caution to be taken by the Government to prevent oyster-stealing and robbing the beds, so that you would not have to look after them, would there still be a difficulty? Oh, no; but consider the trouble it would be to do that.
910. Have you any trouble in preventing people from stealing your bullocks or horses? No; it might be done.
911. *Mr. Farnell.*] Then, as a matter of fact, there are several places that could be utilized for the purpose of oyster culture on the Crookhaven and Shoalhaven Rivers, in blocks of 20 acres? Yes.
912. *Chairman.*] With respect to stealing, do you think there would be much fear of the oysters being stolen? I am well assured that there would be plenty of it.
913. Don't you think it possible for the Government to make regulations sufficiently stringent to prevent it—could it not be provided that oyster-dealers should purchase from no one except those who had licenses, and that a register should be kept of all they receive; and that no oysters should be transported from one place to another unless the person taking them had a pass, carrying out the same precautions as are adopted to prevent cattle-stealing: cattle cannot be driven from one place to another unless the drover has a pass, and a butcher must not slaughter without a license? Yes, but cattle are branded, and oysters are not.
914. Yes, but that is not a reply to my question. I ask you if oyster-stealing could not be prevented by insisting that every person carrying them should have a pass. For instance, you are a proprietor of oyster-beds, and you send a pass with every lot of oysters you send in, to show that they come from your beds; and any person found taking in oysters without a pass would be looked upon by the police as having stolen them. Would not a precaution like that be effectual? Well, supposing I had 20 acres, and another party had 20 acres above me on the same river, and a third person had a similar block higher up, how could I swear to any of the oysters being mine? It is very easy now to say that all the oysters from Shoalhaven are mine, but then I should not be able to recognize them.
915. Then, are you to have a monopoly of the Shoalhaven River for all future time? I think if two or more parties had a river they would always be at war, because, it would be impossible to tell where the oysters came from.
916. But if the limits of the different blocks were buoyed off, would not that be a sufficient protection? That would not make any difference. Supposing I had the Shoalhaven River and another man had Crookhaven, could not he come down in the night and take my oysters?
917. Then he would be a thief? Yes, but I could not prove it; I could not watch the river all night.
918. Then, you think that one person should retain the whole of a river? I do.
919. But if the rivers could be secured so that there could be no oyster-stealing, then you think they might be divided into 40-acre blocks? Yes, if that could be done; but I should not like to have Crookhaven and another person have Shoalhaven; I know I should have to be up all night. You cannot swear to oysters the same as you can to cattle or timber.
920. With regard to the spawning of oysters, is it your opinion that they spawn during certain months only, or all the year round? I believe they spawn all the year round, for at low water I have seen bottles and stones on the beds with nothing on them, and only a fortnight afterwards I have seen them covered with oysters, and that too in the dead of winter.
921. Have you any idea of the percentage of oysters that spawn? I have not.
922. Do you think it desirable that there should be a close season—that during certain months in the year oysters should not be sold? I don't see how that could be done.
923. Do you think that oysters when not spawning are as fat and wholesome for food during the whole of the year? No, I think they are not. There are different times for different oysters to spawn. I know that my deep water oysters are better in the winter than in the summer time; while my bank oysters are not good in the winter and they are in the summer; so that if you made a close season you would have to shut one of them off.

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924. *Hon. J. B. Wilson.*] Tho beds you are working on at Shoalhaven are the original natural oyster-beds, are they not? Most of them.
925. And you have improved them by laying down timber and other hard substances? I have.
926. And you have succeeded well? Yes.
927. Now, in the greater portion of your lease, could not the mud at the bottom be overcome by laying down waste shells, wood, and other material, upon which oysters would thrive? Yes, but that takes time.
928. Supposing you had a lease of fifty years, could not that be done? Yes, but there is such a depth of mud that it would take a deal of stuff to make a hard bottom.
929. In what part of the Shoalhaven River, and at what distance from the sea do you find your oysters fatten best? About 3 miles from the sea.
930. Where they have a certain quantity of fresh water mixed with the salt? Yes, where the water is too salt they fatten, but they do not grow large.
931. Nearer the sea? Yes, we get the smallest oysters nearer the sea; we shifted some of those little oysters when they were no bigger than your nail, and nine months after they were shifted they were five times their size; they increased from an inch to 3 inches diameter.
932. What age were they do you think when you took them? Numbers of years old; I could not say how many.
933. They were full-grown oysters? Yes.
934. And when you moved them higher up the river they immediately commenced to grow and fatten? Yes.
935. How long do you require to let them lay before you take them up? About twelve months.
936. Supposing you had taken spat about six or nine months old, knocked off the rocks, and laid them down, how long would it have been before they were fit for market? About eighteen months, provided they were put in with a good heavy tide.
937. But would not they be much better after three or four years? The shell would be bigger, but I don't think the oyster would be better.
938. The oyster comes to maturity, under favourable circumstances, in about two years, does it not? Yes.
939. What is about the diameter of a well-grown oyster from the Shoalhaven River; would it go through a 2½-inch gage (*ring 2½ inches diameter exhibited*)? Yes, I don't think I have an oyster that would not go through that ring.
940. Take up one of the rings before you which you think about the size of a Shoalhaven oyster? You mean the average size of the oysters?
941. Yes, what you think would be a fair average size? I think this (*taking up a ring 1¾ inch diameter*) is about the size, because mine are all long oysters.
942. Do you think any restriction should be placed by the Government on the sale of young oysters, or oysters of inferior size? Yes, I think there should be a restriction against the sale of young oysters; but as to the size I think it is impossible for any man to tell that.
943. Don't you think it would be safe to prohibit the sale of any oysters that would not pass through a 1¾-inch ring? Three-parts of the Shoalhaven oysters would go through that ring; they are most of them long oysters, years and years old; a great number of them would go through a 1½-inch ring.
944. Are they oysters that would readily sell in the market? Yes, they are what we call whelk oysters.
945. Why do you call them whelk oysters? They grow on the whelk.
946. Are there many of that kind in the Shoalhaven River? Yes, beds of them.
947. Are the oyster beds in the Shoalhaven improved since you took them? Yes; when I took them I did not know where to get a bag of oysters.
948. Did you commence at once to lay down oysters? Yes; I was months and months laying them down, with three boats working all day.
949. Then you have found it profitable? Yes.
950. I am very glad to hear it? I am now bedding them in the channel.
951. Have you ever attempted to make artificial beds on land which is dry, or partially so, at low water? Yes.
952. Were you successful? Yes, we have taken out some very good oysters.
953. Is there not plenty of ground in the Clyde and Tuross Rivers of the same character—nearly dry at low water—that could be utilized in the same way? No doubt there is; to have oysters all the year round you require to have them at low-water-mark, because the sun does the oysters a great deal of good.
954. A little of it? Yes, the morning sun.
955. *Mr. Farnell.*] You speak of the Shoalhaven River being 12 miles in length; how many natural oyster beds are there in that length? Five.
956. And what is about the extent of each bed? I think they are all about one length—about 100 yards.
957. By what width? About 60 feet.
958. Where are they situate—in the channel? Right in the channel, on a bar that runs across the river.
959. What is the nature of the soil in these natural beds? It is a rocky bottom.
960. In the Crookhaven River how many natural beds are there? Well, I call it all a bed, because it is all beach except in one place; there is about half a mile of dredge oysters.
961. That is, oysters taken out of the channel? Yes, that is what I call a bed; I do not call a few oysters here and there a bed; what I call a bed is where a man can dredge.
962. You say that you leased about 50 acres from the Government for the purpose of cultivating oysters? Yes.
963. What was the nature of the bottom in that lease? Mud and shell.
964. What was the depth of the water? Part of it is dry at low water.
965. Is the ground sufficiently firm for persons to walk upon it and attend to the oysters? Part of it.
966. Then, I understood you to say that in respect to this particular 50 acres which you have leased for cultivating oysters, you collect the brood or spawn from other places and lay them down there to grow and fatten? Yes.
967. I understood you to say that it is not very profitable? It is not, unless you have other places from which you can get oysters to send to market.
968. You could not make a living out of the 50 acres alone? No.

969. But would the 50 acres be sufficient, supposing you had a long lease, and supposing you could build walls and make the improvements of which you have spoken? Well, no; I think even with a long lease I should require twice as much.

970. How long would it take to make an oyster farm productive—to improve it so that you could get a return for your outlay? I could not say.

971. I think you stated that oysters are eatable when they are two years old? Yes. If you had plenty of money to keep you for that time, I dare say that with 100 acres you might make a living out of it in a couple of years.

972. Then a person with capital who went into oyster culture in a proper way could do well with 100 acres? Yes, I suppose so; but not as I went to work, with nothing.

973. In what condition was your ground when you went to it on the last occasion? In a very good condition, the oysters growing very fast.

974. Can you tell the Commission how many oysters you have got in the year from that 50 acres? No, because if I send a man for oysters he gets some here and some there; I could not tell you.

975. You keep no account of them? No, I have no occasion to do so.

976. Then how do you know that it does not pay, when you do not know the number of oysters you get off the ground? Because there is not the quantity of oysters growing on it; I know that when I take a bag off it.

977. But you do not seem to know how many are growing on it? I never took notice of the number. I judge by the look of the ground; it is only a small piece of ground, and if I took a load here and a load there from it I should very soon clear 50 acres, for they will not grow again where the ground is cleared.

978. Do you mean to say that they do not come there naturally? They do not.

979. But, if I understood you, you laid down oysters originally on this 50-acre block? Yes, I put down shells and wood and bottles, and so on, to make a hard bottom for the oysters, but I could do no good with it; there was about 6 inches of mud.

980. Well then, are there not places in the Shoalhaven or Crookhaven Rivers that are naturally suited to the cultivation of oysters without preparing the ground as you did your 50 acres? Not to my knowledge. I know every inch of them.

981. You spoke of some oysters you took from near the sea-coast which you planted in beds on the Shoalhaven River. What age were they? They had been there a number of years to my knowledge.

982. How many years? Eight years to my knowledge; they were there on the very day I first went down there.

983. Do you know from practical experience in oyster culture that the oyster is eatable at the age of two years? I know they grow very quickly.

984. At what age is the oyster fit for market? That depends upon the ground it is taken from. If it is taken from where there is a good running tide it is as large as it will be at two years.

985. Do you know at what age the oyster spawns? I do not; I have heard a great many arguments on the subject, but I could never tell.

986. Have you paid any particular attention to the habits of the oyster, or as to the quantity of spawn it throws out? No, sir; all that I have paid attention to is the taking them up where they are thick and putting them down in the heaviest tide to grow and fatten.

987. You stated that the young oysters will only attach themselves to one kind of timber—oak? Yes.

988. Will they not attach themselves to mangroves? Yes, to live mangroves, but if you shake the mangroves they will all drop off.

989. And they will not stick to any dead timber except oak? No; I have tried it so often.

990. Do you know anything of the northern rivers? Only the Clarence; I was working on the Clarence when it was first opened.

991. Do you know whether the oysters in the northern or southern rivers spawn first in the year? I have seen on the Clarence that they were very poor in the month of March, and that they were fat in February; the next month they were almost like a piece of black thread, they were scarcely any size.

992. Does not that take place with all oysters after spawning? No, my deep-water oysters are fat all the year round.

993. They are continually in season? Oh, they must spawn, but they are saleable all the year round.

994. Then do you mean to say that your oysters in the Shoalhaven River are eatable all the year round, and that they spawn all the year round? Yes, but they are fatter in the winter than in the summer.

995. Would you know when an oyster has spawned? I should not.

996. Not whether it has spawned or not? No, I could never make that out, though I have heard a good deal said about it. I know I have been in the water and had my arms skimmed all over with spat; but if you came and took every oyster off the rocks they would be covered again a week after.

997. The spawn you speak of was the spawn of rock-oysters? Well, it is very hard to say where it comes from.

998. Was it not in the vicinity of the rocks that you found it? Yes; I was getting rock-oysters at the time, but the spawn might have come down the bay.

999. You have never seen any of the deep-water oysters spawn? No, I have not; but I never took notice of them.

1000. Now, what length of lease, at a nominal rental, do you think the Government ought to give to encourage the cultivation of oysters? I think it should not be less than fifteen years.

1001. I do not mean leases of the natural beds, but of portions of rivers on which oyster-beds could be made? I think fifteen years would do.

1002. Do I understand you to say that it would pay persons to take leases for that period and to lay down fascines, to build walls, and to make artificial beds? Yes; it would take a man about five years to improve the beds, and the other ten years would pay him.

1003. And you think a fifteen-year lease would pay him, with the condition that at the expiration of that time he should give up the ground in good condition—say the average condition of the previous five years? Yes, I think fifteen years would pay him; ten years would be too little.

1004. In what state are the natural beds now which you have improved? In a very good state. When I went down there the other day I was quite satisfied with them.

1005. What are the banks of the Shoalhaven River which you lease composed of? Almost all mud and shells.

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1006. What do the oysters stick to? They stick to the cobbler's pegs—the roots of the mangroves.
1007. Do you see any objection to the granting of licenses—at the expiration of the present leases—to men who would employ themselves with their families in getting these oysters off the cobbler's pegs or rocks and selling them to persons who have layings such as your 50 acres. Don't you think it would give remunerative and constant employment to a number of families? I think that if the rivers are leased as they are at present there will be no oysters on the rocks at all soon.
1008. You do not use all the oysters on these cobbler's pegs, do you? Yes; the large ones I make use of, and the young ones I put back and spread out on the flats to make beds of, to harden the ground.
1009. But you must be aware that there are a great number of spat going to waste, especially in Port Jackson for scores of miles, and up the Parramatta River you can see the rocks literally plastered with oysters? Yes, they want knocking off; they will never be any good if they are left where they are.
1010. Well, do you see any objection to the issue of licenses to persons to knock them off and sell them to persons who would lay them down to grow and fatten? No, I see no objection; I think it is the best thing that could be done.
1011. You think it would create profitable employment for industrious labouring men and their families, besides being profitable to those who purchased them in order to plant them to grow and fatten? Yes, I do; because the longer they are left the more buncy they get.
1012. Would you be inclined to purchase them? I have more than I can make use of.
1013. Then those which you cannot use are going to waste? No, they remain there till they are wanted; it would be impossible for any one to keep them down altogether, they accumulate so fast.

Mr. Henry Wallace Bell called in and further examined:—

Mr. H. W.
Bell.

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1014. *Chairman.*] I understand that you have some additional evidence to give, Mr. Bell? Yes, with regard to the oyster beds of Victoria and Tasmania.
1015. You have had some experience in Victoria then? Yes.
1016. In what part of Victoria? At Western Port and Port Albert.
1017. What was the result of your experience? Well, we have been charged with having destroyed the oyster beds by overdredging, and I wish to remove that impression.
1018. Whom do you mean by "we"? The firm I am connected with, who are proprietors of a large number of oyster beds.
1019. You mean at those two places, Western Port and Port Albert? Yes.
1020. And is not that the fact? No doubt the beds were overdredged to a certain extent; but we took up ground at Western Port under the Victorian Act, and stocked it with ware, and the whole of it—some £3,000 worth—was destroyed where we never used a dredge at all, except perhaps occasionally, to see how the beds were looking.
1021. What was it that destroyed the oysters? That is what we could never arrive at.
1022. Was it some sudden influx of sand? No, it was nothing of that sort. We attributed it to some sort of disease; and we based our opinion upon the fact that a number of small patches of oysters—natural beds—that we did not dredge, except very slightly, were also destroyed at the same time in different parts of the bay.
1023. You think it was not from overdredging then, and that if there had been no dredging they would still have been destroyed? Yes, because the oysters died on the natural beds as well as on the artificial beds, and on those which were never dredged at all. I may mention that there is a very bad practice carried out here in dredging. It seems to be the custom here to take up a boat-load of oysters, young and old, and to carry it away and sort it elsewhere. All the culch, except the oysters required for use, is then thrown away, and used for lime-burning or other purposes.
1024. Where is that done? It used to be done in all the leased rivers; we have prevented it as much as we could, but it has been the case in many places: all the culch has been removed.
1025. Is there anything else you wish to say? No, I think not.
1026. *Mr. Farnell.*] You say the oystermen take the culch away to some other place. Do you think they ought to sort the dredgings on the spot? Yes; it ought to be made compulsory to throw everything back from the boat. That is what they do in Victoria; but there they adopt a different system altogether.
1027. Are there no good oyster beds left in Victoria, that you are aware of? Not one that I am aware of.
1028. Then Victoria is dependent upon New South Wales and South Australia for her supply? Yes, and Queensland.
1029. And in Tasmania the beds are exhausted also? I think so.
1030. Were they very extensive in Tasmania? Yes, in Spring Bay.
1031. They were exported to Victoria in large quantities during the gold discoveries, were they not, and the beds were overdredged during that time? I do not think so. We only traded for them in 1861 and 1862. I think it must have been some other cause.
1032. *Hon. J. B. Wilson.*] Did the oyster beds at Western Port and Port Albert fall away at the same time? Yes, about the same period.
1033. Were there any symptoms of the disappearance of oysters in Victoria at the same time in any other place? I do not know of any other place where oysters are procurable.
1034. Then you think the disease, if any, was confined to those two places? Yes.
1035. You are lessee of the Tuross River and Brow Lako, are you not? Yes.
1036. Are you personally acquainted with the place? Yes.
1037. Do you not think there is a considerable quantity of low-lying mangrove land, covered with water at high tide, that would be suitable for oyster cultivation—for making beds? I do not know of any.
1038. Is there not a considerable quantity of low-lying land on the Tuross River? I believe so, on the right hand side.
1039. Do you think it so situated that it could be used for that purpose? I do not; there is too much mud on it.
1040. Could not that be overcome by laying down culch of various kinds? I do not think so.
1041. Are you aware that these artificial beds have been tried in other parts of the Colony and have proved a success? I am not aware of it; my greatest objection is, that the rise and fall of the tide is not sufficient in the Tuross River.

1042. The tide rises about 4 feet, does it not? Yes. On the coast of France, and in other parts of Great Britain where there are oyster-beds, it is 30 or 40 feet or more. Mr. H. W. Bell.
1043. But what difference would that make, provided that the oysters were dry in both places for a certain time during every twenty-four hours? Well, I think they do better with a good run of tide over them. 17 Nov., 1876.
1044. You think a strong current is a great advantage to them? Most decidedly. I know that an attempt was made in Victoria, by Mr. Ross and others, to form a weir, and it was not successful; it was connected with the sea with a sluice-box.
1045. Do not oysters thrive in many parts of the world where there is no current? Yes, in some places where they get proper food, but not so well as where there is a current.
1046. If you had a very long lease or a freehold of 50 acres, could you not do a great deal with it in the way of oyster culture? It would depend entirely upon the locality.
1047. You have been speaking of places where there is too much mud—Could you not do a great deal by laying down proper cultch? Yes, if the oysters were not injured by frost, which is very severe down towards the south in the winter.

TUESDAY, 21 NOVEMBER, 1876.

Present:—

HON. J. B. WILSON,

J. S. FARNELL, Esq.

THE HON. THOMAS HOLT, M.L.C., IN THE CHAIR.

Mr. William John Langham, Inspector of Oyster Beds, called in and further examined:—

1048. *Chairman.*] You are Inspector of Oyster Beds, appointed under the Act 31 Victoria No. 20 to regulate Oyster Fisheries, and to encourage the formation of oyster beds? Yes. Mr. W. J. Langham.
1049. How long have you held that office? Upwards of two years, sir.
1050. And what are your duties? They have chiefly consisted in the inspection of the different oyster beds under lease, and in reporting to the Government as to their condition. 21 Nov., 1876.
1051. Are your duties confined to the inspection of rivers under lease—do you not also inspect those that are not leased? Yes.
1052. Then you inspect the whole of the oyster beds in the Colony as far as you are able? Yes.
1053. And how many rivers have you been able to inspect? Nearly the whole of them, with the exception of the Tweed and the Richmond, and one or two small places to the southward of Twofold Bay.
1054. You speak of the rivers being leased: upon what authority are they leased—is it not under the Act I have just mentioned (31 Victoria No. 20), which came into operation on the 1st February, 1868? I believe so.
1055. Are there not conditions provided in that Act under which the leases are issued? There is a condition that the rivers should be left in the same state as they were in when they were leased.
1056. Is that the only condition—does not the Act also state that the Government shall have power to demise them in connection with the laying down and forming of new oyster beds—is not that one of the conditions? Yes.
1057. Is it not another condition that the leases shall be in writing? Yes.
1058. Are you aware whether the lessees have complied with the conditions relating to the laying down and formation of oyster beds? In a few instances they have, but very few.
1059. In very few instances, not in every instance? No.
1060. Has the condition in the 3rd clause been complied with—that the leases shall be in writing? In one or two instances, that is all that I know of personally.
1061. And how many leases have been issued—how many lessees are there? I am not exactly sure of the number, because some of them are formed into companies.
1062. But the lease would still be the same—it would only be one lease? Yes; but the lessees are not the same, some of the original lessees have sold out.
1063. Did you see the Government advertisement in the *Gazette* and newspapers calling for tenders for these leases? Yes.
1064. Did you notice that it stated that all tenders must be accompanied by a guarantee from two responsible persons to enter into a bond to the extent of ten times the amount of annual rent, to see that the conditions of the leases are fulfilled, and that the leased areas are returned to the Government in the same state as when they were granted? Yes.
1065. That is what you alluded to? Yes.
1066. There is nothing of that kind in the Act? Yes, the Act states that the lessees shall find sureties.
1067. The Act gives the Government power to make regulations, but there is nothing of that kind in the Act. Are you aware that the bond has been executed in all cases by the lessees and their sureties? In one or two instances it has, but not on the whole.
1068. Have all the lessees strictly carried out the conditions under which the Government have power to demise these areas in respect to the forming of oyster beds? No, they have not.
1069. Have any legal proceedings been taken by the Government against those who have not done so? No.
1070. Have you reported on any occasions that the lessees have not complied with the conditions of their bond? No, because the bond has never been executed—the leases have never been executed.
1071. But you have already told us that these were the conditions under which the leases were issued. What I want to know is whether you have called the attention of the Government to the fact that these conditions have not been carried out? I have in my reports in some instances, but they have not been worded in that way.
1072. Have you copies of your reports? They have in the office.
1073. Then we can get them? Yes.
1074. Can you inform the Commissioners what are the areas of the different leases, naming them separately; a rough estimate will be sufficient? In the different rivers?

- Mr. W. J. Langham.
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1075. Yes, taking the rivers separately, and giving a rough estimate of the area of each lease? Do you mean what I term natural beds?
1076. I mean the total area included in each lease? The whole of a river and its tributaries are included in a lease.
1077. Well, take one river to begin with, and give us a rough estimate of the number of acres it comprises within 100 acres, or even 1,000 acres. Which is the most northerly river leased? The Clarence River.
1078. Have you any idea of the area of the Clarence River, including the creeks belonging to it—how many acres? Do you mean the oyster-bearing portions of it?
1079. Everything supposed to be included in the lease; is it 1,000 acres? More than that.
1080. Is it 5,000 or 10,000? It must be that at least.
1081. What are the banks of the Clarence River composed of—are they rock or mud? Mud and shell.
1082. Is it rich mud? Where the oysters are got it is.
1083. Rich mud? Yes.
1084. What do the young oysters chiefly stick to? Just on to the shell bottom.
1085. Are there any mangrove swamps there? Away back on the shore there are a good many.
1086. Do a great many oysters stick to the mangroves? Not a great many.
1087. Is there a great deal of spawning going on in the Clarence River? Yes. It is the lake portion, known as the oyster channel, in which the oysters are got on the Clarence; it is not in the main river.
1088. I am speaking of breeding: is it going on to a great extent in the swamps where these mangroves are? Not to any very great extent.
1089. Are the young oysters utilized? No; all that they use there are the natural beds; they lay nothing down.
1090. They make no use of the spat that is collected on the mangroves? No.
1091. That is going to waste? Yes; they just work the natural beds, that is all.
1092. Now, if these spat were collected and placed on ground suitable for fattening, would they not produce an immensity of food? A great deal.
1093. That is to say, the production of oysters could be increased to an incalculable extent? Yes.
1094. And all this is under lease? Yes.
1095. Have any improvements been made in carrying out the conditions of the Act with respect to laying down and forming new oyster-beds on the Clarence? Not that I am aware of.
1096. Could they be made without your being aware of it? No, unless it was done within the last nine or ten months—since I was up there.
1097. But you would have been almost sure to hear of it? Yes.
1098. They could scarcely have been made without your knowledge? No.
1099. Who is the lessee of the Clarence River? Mr. Peter James.
1100. *Mr. Farnell.* Are there mangrove swamps in the Clarence? Yes, in the lake.
1101. *Hon. J. B. Wilson.* You have stated that the natural oyster beds in the Clarence are in what is termed the lake. Is there a considerably strong tide-way or current in that lake? Not particularly.
1102. Not as strong as in the river? No, except in flood-time; it does not rush so strongly through.
1103. Are you aware whether there are any natural beds in the Clarence—in the river itself? No, I have never heard of any.
1104. How far is this lake in which the natural oyster beds are from the mouth of the Clarence River? I should think it was about four to five miles.
1105. But it is all salt water? Yes, freshened a good deal by the freshes.
1106. But at ordinary times it is salt water? Yes.
1107. And is it from this lake that the lessees get the principal portion of the oysters they send to Sydney? From the lake and the creek that runs into it from the river, which is called the oyster channel.
1108. That is almost the only use they make of the Clarence River? That is all.
1109. *Chairman.* But they do not consider that any person except themselves has a right to make use of the oysters or the spat in the river or on the mangroves? No.
1110. Although they do not make use of it themselves they claim the exclusive right of the whole—that is their view of it? Yes.
1111. You say there are no natural beds in the river itself: where does the spat come from? From the creek that connects the lake with the river; there are natural beds in the creek.
1112. Does this creek supply the whole of the mangroves with spat? Yes, most of the spat comes out of it; there are a great number of natural beds in the creek.
1113. *Mr. Farnell.* Is it a creek or an arm of the river? It is an arm of the river going into the lake known as the oyster channel.
1114. When you speak of the area leased in the Clarence, do you mean the whole of it, or only that which is oyster-producing? The whole area of the river; the only portion they make use of is this creek and the lake adjoining it.
1115. That is the only oyster-producing portion? Yes.
1116. Then the fact is that the lessees lease a portion of the river that is not oyster-producing at all? Yes.
1117. *Chairman.* Is it not capable of producing oysters by artificial means? There are a great many places where there are sandbanks.
1118. I do not say the whole; but are there not places on it where as good oysters could be produced as those which come from the lake? Yes, by artificial means.
1119. Which is the next river to the Clarence that is leased? Port Macquarie is the next.
1120. What do you suppose is the area of Port Macquarie—the whole of the area which the lessees consider to be included in their lease? They consider the whole river is included, the same as in other cases.
1121. What is the area—is it 5,000 or 10,000 acres? It is 4,000 or 5,000 acres or more. I have no means of ascertaining the exact area—I can only give a rough estimate.
1122. What is the nature of the beds and the banks of the Port Macquarie River? The beds are very deep; they are about the deepest there are.
1123. Are they mud? No, it is a sort of small quartz pebble that the oyster attaches itself to in the bed of the river.

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1124. And the banks of the river, what are they? Alluvial for the most part.
1125. There is not much rock there? There is no rock there, except down towards the mouth of the river, where the oysters are very small.
1126. Are there many mangrove swamps? Yes, there are some on the edge of the river.
1127. Is there much spat attaching to them? There was not much when I was there.
1128. Did you see much spat anywhere, on the banks, in the swamps, or in the bed of the river? Very little except in the bed of the river, which is very deep.
1129. Is there much in the bed of the river? Not much, the floods seem to have destroyed the oyster beds to a great extent.
1130. Then it is not a very good oyster-producing river? What oysters there are are very fine, but the floods seem to have destroyed a good many.
1131. There are not so many young oysters going to waste as there are in the Clarence? No, sir.
1132. *Hon. J. B. Wilson.* Is Port Macquarie under lease at present? Yes.
1133. *Chairman.* I think it is desirable that we should obtain the fullest information with regard to these rivers, and that you should tell us in addition to the area the rent paid for each lease. What is the rent payable for the Clarence River? £185 a year altogether.
1134. *Hon. J. B. Wilson.* Have you ever heard that Port Macquarie was very famous for its fine oysters during previous years? Yes.
1135. And the oyster beds you say have been destroyed? Yes, partly; and last year and the year before they got none; but they are working the beds again this year, and getting a few oysters.
1136. What is the rent of the Port Macquarie lease? £310 per annum.
1137. *Chairman.* What is the next river, Mr. Langham? Camden Haven.
1138. What is the area of Camden Haven? I should think it was some 2,000 acres or more.
1139. What is the nature of its banks and beds? A mud formation generally, and mangroves; and there are natural beds of drift oysters on the bed.
1140. Is there any large extent of mangroves? Yes, a great extent.
1141. Are there a great number of small oysters sticking to them? Yes, a great many.
1142. Have the lessees made use of this spat? Yes, they have laid some of it down.
1143. To what extent do you think? They have laid down somewhere about a thousand bags; they have laid them down on the natural beds.
1144. Merely to grow and fatten? Yes.
1145. But they are not making beds where there were no beds previously? No.
1146. Is there a great deal of this spat going to waste? Yes.
1147. And they have the exclusive right to it? Yes.
1148. And however valuable it might be to others to lay down for growing and fattening, no one can touch it without their permission? No.
1149. *Mr. Funnell.* When did you first know the Camden Haven River as an oyster-producing river—was it many years ago? It was about two years ago when I first went on to it; I have known that oysters were coming from it for the last five or six years.
1150. Large numbers of oysters were sent from Camden Haven to the Sydney market, were they not? Yes.
1151. Is it a fact that the Camden Haven River beds were worked out some years ago? Not that I knew of.
1152. Are the beds as prolific now as they were some years ago? There are not near so many oysters in them as there were when I first went down there.
1153. That is two years ago? Yes.
1154. Are the lessees ever dredging the beds? Yes.
1155. *Chairman.* Who are the lessees? Mr. Woodward is the lessee.
1156. What rent does he pay? £170 a year.
1157. Do you mean by over-dredging that he has removed immature oysters—oysters that are too young? No; but they work the beds bare; for instance, when there are a quantity of oysters they put five or six men on, and when the oysters get scarce they knock the men off. When I first went down there were four men working there, now there is only one or two at the outside.
1158. What is the next river, Mr. Langham? The Manning.
1159. What is the leased area of the Manning? 8,000 or 10,000 acres at the least, I should think, or more, but I cannot speak with any certainty.
1160. What is the rent of the lease? £1,150 a year.
1161. What are the banks and beds of the Manning River composed of? Chiefly of mud.
1162. Are there many mangrove swamps there? Not a great many.
1163. Are there many young oysters there? No, there are very few as a rule.
1164. To what do they attach themselves? Chiefly to the beds at the bottom of the river.
1165. To the cultch? Yes. There are mangroves on the south side, but not to any great extent.
1166. Are there many young oysters sticking to the mangroves? No, not any great quantity.
1167. Who is the lessee? Mr. Woodward.
1168. Has he laid down or formed any oyster beds? No.
1169. He has done nothing? No; only worked the natural beds.
1170. Reducing the number of oysters upon them? Yes.
1171. What is the next river? Cape Hawke.
1172. What is the area of Cape Hawke? From 2,000 to 3,000 acres, as near as I can guess.
1173. And what are the banks and beds composed of? Chiefly mud—mud and shell.
1174. Are there any mangrove swamps? Yes, there is a great deal of mangrove about it.
1175. Are there many young oysters sticking to them? Yes, in places.
1176. Who is the lessee of Cape Hawke? Mr. George Clarke. I should say that it is known as Wallace Lake, and not Cape Hawke.
1177. Does he make use of any of this spat? No.
1178. Has he formed any oyster beds? No.
1179. Has he done anything to improve the leased area? No; he is only working the natural beds.
1180. And he has made no use whatever of the young oysters? No.
1181. What is the next river? Port Stephens.

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1182. What is the area, do you think, of Port Stephens? It is a very large place—thousands of acres.
 1183. Can you give us some idea of its extent; does it contain 20,000, 30,000, or 50,000 acres? I should think there were from 30,000 to 40,000 acres, or more.
 1184. Of what do the beds of the river and its banks chiefly consist; of course in such a large area they must vary considerably? In some places there is rock, and mud and shell banks in others.
 1185. Are there mangroves as well? Yes. The rocks are a sort of ironstone.
 1186. Are they covered with young oysters, the same as the rocks in Port Jackson? No, but there are a great many oysters there.
 1187. And the mangroves—are they also covered? Yes.
 1188. Who is the lessee of Port Stephens? Mr. Peter James.
 1189. And what rent does he pay for this large area? £150 a year.
 1190. For this vast area? Yes.
 1191. Has he done anything in laying down and forming new oyster beds? He has laid down, I suppose, one or two thousand bags.
 1192. What oysters were they? They were chiefly taken from the mangroves.
 1193. Can you tell us what proportion the oysters he has laid down bear to the oysters on the rocks and mangroves? They bear no comparison to those that are left. I could not tell you what is the proportion.
 1194. But out of this vast area 1,000 or 2,000 bags would be a mere nothing? Yes, you could not tell where they were taken from.
 1195. And are there good layings, as they are termed in England, in the Port Stephens River, where young oysters removed from the rocks would grow and fatten? Yes.
 1196. There must be a large extent of good layings in such an extensive area? Yes, there are several places where they could be laid down.
 1197. And all these oysters that are now going to waste might be converted into excellent food? Yes.
 1198. What is the next river? Lime-burner's Creek.
 1199. And what is the area of that? About 500 or 600 acres.
 1200. Who is the lessee? Captain Griffin.
 1201. What rent does he pay? £2 10s. per annum.
 1202. Has he done anything in connection with laying down or forming oyster beds? He has done a great deal for a small place like that.
 1203. What is the nature of the beds and banks of Lime-burner's Creek? Chiefly mud.
 1204. Are there any mangrove swamps? There is very little mangrove.
 1205. Is there any rock? There is a little rock and a little mangrove, but not much.
 1206. Does he utilize the spat? Yes, all he can get of it. Some time back he wished to get some of the spawn from the rocks on Port Stephens, but he told me that the lessees refused to let him have any.
 1207. They preferred to see it going to waste rather than allow him to utilize it? Yes, they would not allow him to have anything at all to do with it.
 1208. *Hon. J. B. Wilson.* Does not Lime-burner's Creek flow into Port Stephens? Yes.
 1209. *Chairman.* Then Captain Griffin is the only lessee who has strictly complied with the terms of the Act? Yes, he is the only one that I know of.
 1210. *Mr. Farnell.* Is his lease a natural oyster bed? Yes, a portion of it.
 1211. *Hon. J. B. Wilson.* Has Captain Griffin been successful in his laying down? He made a claim on the mangrove swamp, and the back water used to come in and smother the oysters with mud; he had to take them away.
 1212. You say they were smothered by mud, but had he formed a proper bed of cultch for the oysters? No, he had left the natural bed for them.
 1213. What is the next river? The Newcastle River.
 1214. What are the beds and banks of the Newcastle River? Shell and mud.
 1215. And rock? No, there is no rock there.
 1216. Are there any mangrove swamps? There are some, but very few.
 1217. What is the area of the lease? 10,000 or 12,000 acres I should think.
 1218. Who is the lessee? Mr. Gibbins.
 1219. What rent does he pay? £775 a year.
 1220. Has he carried out the conditions required by the Act, as regards laying down and forming oyster beds? No, he has never done anything beyond working the natural beds since he has had it.
 1221. He has done nothing to improve it? No; he has shot a few oysters here and there at different times when he has been shifting them, that is all.
 1222. Have you any idea what condition these oyster beds were in before he leased them—were they over-dredged, or in good condition? The river was closed for two years, but it was worked just as much during that time as it was before.
 1223. Has it been improved since Mr. Gibbins leased it? No, I think it is becoming worse, and that it ought to have a spell.
 1224. Then the object of the Act in his case has not been carried out? No.
 1225. Are there many young oysters in the mangroves and banks: I think you said there were no rocks? They mostly stick to the ballast; the banks have been cut up for building to a great extent.
 1226. *Hon. J. B. Wilson.* How far from the mouth of the Hunter are the principal natural beds? About $2\frac{1}{2}$ to 3 miles.
 1227. Are none of them higher up? They extend about two miles further up the main river to the upper end of Mosquito Island and Limeburner's Bay.
 1228. *Chairman.* What is the next river? Lake Macquarie was leased, but it was thrown up.
 1229. It is not leased at present? No. The next river is Broken Bay.
 1230. What is the area of Broken Bay? It is a large place; I should think some 8,000 to 10,000 acres.
 1231. Who is the lessee? Mr. Gibbins.
 1232. What rent does he pay? £127 a year.
 1233. Are there many oysters sticking to the rocks and mangroves at Broken Bay? There are a great quantity sticking to the rocks there.
 1234. Are the rocks at Broken Bay as thickly plastered with young oysters as the rocks in Port Jackson? Yes, there is ten times as much in some places.

1235. Are there any in the mangrove swamps? Not a great many; there are on the Brisbane Water side. Mr. Gibbins only uses the Hawkesbury; he does not use the Brisbane Water side at all.
1236. I am not asking you what he uses, but what he claims an exclusive right to? He claims a right to the whole of it.
1237. Then were you right in stating that the area to which he claims exclusive right is 10,000 acres? I should say it is a good deal more, but I have no means of ascertaining the exact area.
1238. How much do you think then he can claim under his present lease? I should say 20,000 acres or more.
1239. And in this area there are mangrove swamps as well as rocks? Yes. It is to the rocks chiefly that spawn attaches; there are mangroves, but most of the young oysters are on the rocks.
1240. Does Mr. Gibbins make any use of these young oysters? He lays some of them down for a few months and shifts them—that is all.
1241. The oysters are knocked off the rocks and mangroves, and he lays them down to a small extent? Yes.
1242. Have you any idea to what extent he does this? He has laid down perhaps 4,000 or 5,000 bags there—that is all.
1243. Now, can you give us any idea what proportion those he has laid down bear to the oysters remaining on the rocks and mangroves? No proportion at all; you could not tell where they were taken from.
1244. They are like a mere drop in a bucket of water? Yes.
1245. Then there must be a vast quantity of young oysters going to waste? Yes; I think there is enough spat in Broken Bay to supply half the rivers working at the present time.
1246. What is the next river leased? George's River comes next.
1247. What do you think is the area of the George's River lease? I should think about 5,000 or 6,000 acres at least.
1248. Including Botany Bay? No; there must be 20,000 acres, or more, including Botany Bay.
1249. Who is the lessee? Mr. Albert Emerson.
1250. What rent does he pay? £131 a-year.
1251. Does he claim the whole of Botany Bay as well as George's River? Yes.
1252. And all the creeks running into it? Yes.
1253. And you estimate the area at 20,000 acres? Yes, or more.
1254. What do the beds and banks consist of? Chiefly rock.
1255. Are there many young oysters sticking to the rocks? Yes, a good few.
1256. Does Mr. Emerson carry out the conditions of the Act as regards laying down and forming oyster beds? Yes; he has laid down a large bed in front of his place.
1257. Young oysters taken from the rocks and mangroves? Yes; most of them off the rocks.
1258. Can you give us any idea what proportion the oysters he has laid down bear to those which remain on the rocks? You would hardly miss them from the rocks where they were taken.
1259. Then there are a great number of oysters left on the rocks which might be converted into valuable food, if they were placed on suitable ground where they would grow and fatten? A great many on the George's River, below high-water-mark, grow themselves; they are not so thick there as in some places.
1260. What was the general character of the oysters on the natural beds in Botany Bay and George's River, before they were leased? I could not say what they were before they were leased.
1261. *Hon. J. B. Wilson.* Had they the reputation of being very fine oysters? Yes, always.
1262. Then, would not you gather from that that there must be some quality in connection with Botany Bay and George's River that would make them suitable places for laying down oysters and forming beds? Yes.
1263. Has Mr. Emerson succeeded with the oysters he has laid down—have they grown well? Yes, very well.
1264. Which is the next river that is leased? The Shoalhaven River.
1265. Who is the lessee? Mr. Johnson.
1266. What do you estimate the area of his lease to be? From 5,000 to 10,000 acres or more; there is a good extent of it, because there is the Crookhaven River as well.
1267. What are the banks and beds of the Shoalhaven River? Chiefly mud.
1268. Are there any mangrove swamps? Yes, a great deal of mangrove.
1269. Are there a great many young oysters on the mangroves? Yes, great quantities.
1270. What has the lessee done in connection with laying down and forming oyster beds there? He has laid down a few oak saplings at different places, to put oysters on, but he has made very little improvement—he generally takes the young oysters off the mangroves and lays them down in deep water to grow, but he does not leave them there for any length of time.
1271. He has not made improvements to any large extent? No.
1272. What proportion of the oysters on the mangroves does he take off? You could hardly notice what he takes away.
1273. There are so many of them? Yes; and they grow very fast. I have seen places where they have been taken off, and six months afterwards you would not know that any had been taken.
1274. But in the places where he lays them down they do grow, only that he does not leave them there long enough? No only for a few months.
1275. And he persists in sending oysters to Sydney in an immature state? Yes.
1276. Are there many suitable places for growing oysters on this river? Yes.
1277. Where they would grow and fatten well? Yes.
1278. What is the next river? Durass Lake.
1279. Who is the lessee? Mr. Bartley.
1280. What rent does he pay? £5 a year.
1281. What is the area of the leased ground? I should think about 1,000 or 1,500 acres or more.
1282. What is the nature of the banks and beds of the river? Chiefly mud and swamp.
1283. Are there any mangrove swamps? No.
1284. To what does the spat attach itself? To the whelk.
1285. Are there any good oyster beds there? Yes, the oysters are very fine there.
1286. What is the difference in the beds since they were leased—have they improved or otherwise? They are greatly improved since they were leased.

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1287. Does the lessee lay down much spat? He generally employs the blacks; they go round the lake and pick the young oysters off the rocks and throw them into deep water, and those which grow on the whelks which are in very shallow water are thrown into deep water also.
1288. And there are very fine oysters there? Yes, very fine.
1289. What is the next river? The Clyde.
1290. Who is the lessee of the Clyde? Mr. Gibbins.
1291. What rent does he pay? £135 a year.
1292. What is the estimated area of the Clyde lease? I should think 6,000 or 7,000 acres or upwards of that.
1293. *Hon. J. B. Wilson.*] Does that include Bateman's Bay? No.
1294. *Chairman.*] What are the banks and beds of the Clyde? Chiefly mud and mangrove swamps.
1295. There is not much rock there? Yes, there is rock too, a sort of slate rock.
1296. Are there many young oysters on the rocks? Yes, a great quantity.
1297. And on the mangroves also? Yes.
1298. What has the lessee done towards laying down and forming oyster beds? Very little; they have almost stripped the whole of the place. Some time ago they laid down a great quantity, but they have been taking them so quickly that the beds are nearly bare now.
1299. How long have they been laid down? About twelve months.
1300. And were they in a state of perfection when they were taken up? No.
1301. They were in an immature state? Yes, small-sized chiefly.
1302. Not fit for the market? No.
1303. But still they were sent to market? Yes.
1304. And now you say the oyster beds have been stripped bare? Yes, most of them.
1305. Does not the lessee employ any men to take the young oysters off the rocks to lay down? No, he has only one man there.
1306. What could one man do, supposing his whole time were employed in taking the oysters off the rocks and mangroves? He could not do a great deal; the blacks are generally employed.
1307. But you say there is only one man employed at present. I want to know what he is doing now and what can be done—that is to say, what proportion of the young oysters is taken for planting, and what proportion remains? Of late they have been taking the spat off the mangroves and sending it to Sydney and destroying the rest. When the blacks come, unless they are watched, they generally take the young oysters ashore off the mangroves and sell them and leave the rest to die. They will get a boat-load at a time and take them ashore to sell and leave the rest there.
1308. Do you mean that they are acting under the authority of the lessee, that they take the oysters from the mangroves, large and small, and when they have got them ashore they select the large ones to send to Sydney, and leave the smaller ones to perish? Yes, they generally employ the blacks to get them by the bag.
1309. Is that done to a large extent? Yes, there is a great deal of it lately.
1310. With respect to the larger oysters, what do they do with them? They send them to market.
1311. But are they marketable? Well there are people who buy them.
1312. That is not an answer to my question. Are they marketable, in your opinion? No, they are not.
1313. They are not such as should be sold for human food? No.
1314. But if laid down on suitable soil they would grow and become fat and good oysters? Yes.
1315. *Hon. J. B. Wilson.*] Were there not natural oyster beds in Bateman's Bay? There never were any in the bay; the bar separates it from the river.
1316. *Chairman.*] What is the next river, Mr. Langham? The Tuross.
1317. Who is the lessee? Mr. Martin.
1318. Is that the gentleman who was examined by us the other day? No, that was Mr. Bell, his partner.
1319. What is the area of the Tuross? From 2,000 to 3,000 acres, or more.
1320. And what is the rent of it? £135 a year.
1321. What are the banks and beds of the river? Rock and mud chiefly.
1322. Are there many young oysters sticking to the rocks? A great many in places.
1323. Are there any mangrove swamps? Yes, to a very small extent.
1324. Have the lessees done anything in laying down and forming oyster beds? No, they have been chiefly working the natural beds, that is all.
1325. Are there very many young oysters going to waste on the rocks? Well, there are a good few that could be made use of.
1326. Those that the lessees remove from the rocks are a mere nothing to those that are left? No; I do not know that they do remove any.
1327. But they would not allow any one else to remove them? No.
1328. What is the next river? Brow Lake.
1329. Who is the lessee? Mr. Martin has that also.
1330. What rent does he pay for it? £35 a year.
1331. And what do its beds and banks consist of? Chiefly mud.
1332. Are there any mangrove swamps? There is very little mangrove.
1333. To what does the spat chiefly attach itself? Most of them are mud oysters there.
1334. There is not much cultch there or dead oyster shells? No; there are a few stones here and there, but the place has not been worked for some time, and the freshes seem to have killed the oysters.
1335. Has the lessee done anything to improve his lease by laying down and forming oyster beds? No; it was formerly leased to a man named Brown, and he sold it within the last twelve months to Martin.
1336. Has it improved since it was leased by the Government? It seems to be in about the same state; very little has been done to it.
1337. All they seem to care about is to get as many oysters as they can out of it? That is all.
1338. What is the next river? That is the whole of them.
1339. Have you considered whether it is to the interest of the public to lease such large areas to one person or one company? I think not.
1340. Do you not think there are a number of persons who might make a good living out of these oyster-bearing rivers, if they were leased in small areas? Yes, smaller than they are at present.

1341. I wish to call your attention to some evidence given by Mr. Knight, before a Select Committee of the Legislative Assembly in 1867. In answer to a question from my honorable friend Mr. Wilson—"What extent do you think each bed should be?" Mr. Knight says,—“I think two acres would be plenty;” and in reply to a question put by the Chairman—"Do you think 2 acres would be a sufficient extent to afford a comfortable subsistence for a man with a family, through the whole year?" he says—"Yes, after the first three years, when it came into full bearing." Now, I wish to have your opinion, as a practical man and the Inspector of Oyster Beds in this Colony, on the subject of Mr. Knight's evidence, as to whether 2 acres would be sufficient to afford a comfortable subsistence for a man with a family during the whole year? I think it would be too small myself.

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1342. Have you any idea how many oysters can be planted upon 1 acre of ground? That depends upon whether you can get suitable ground.

1343. Mr. Knight states, in answer to another question by Mr. Macpherson, as to the rates obtained for small oysters beds in England,—“A bed of 3 or 4 acres in some cases would fetch as much as £50 or £100, but they are old-established places which have been planted, where there are adult oysters for spawning, &c., &c.” You think 2 acres would be too little? It depends entirely upon where it is; I think it is rather small myself.

1344. It is when compared with the 8,000 or 10,000 acres in some of these leases; but supposing it were extended to ten or twenty times that size, which would be 40 acres of good oyster ground, with the privilege of getting oysters off the rocks or mangroves, do you think a man would be able to make a good living out of it? Yes; of course I do not consider the whole of these 10,000 or 20,000 acres in these leased rivers as good oyster ground.

1345. No, you have spoken of them as the entire areas claimed by the lessees? Yes.

1346. Is it not the very same in respect to squattages—every acre on a run is not available—only a certain portion of it? Yes.

1347. Do you see any objection to the Government licensing persons, on the payment of a small fee, to remove the spat from the rocks and mangroves, and sell it to persons to lay down and fatten? That would not answer in every case, because in many instances private individuals would not allow these men to go in front of their residences or their orchards for that purpose; they would not care to have persons of unknown character trespassing on their property in that way.

1348. There might be exceptional cases of that sort, but how few of the rivers of which you have just given us an account have orchards or private residences fronting them? No, but all those rivers do not grow spawn to the same extent.

1349. But before these leases were granted any person might go on these grounds and get spat. What I wish to know is, whether you see any objection to restore these old oystermen's rights by means of licenses, the same as those granted for cutting timber? I see no objection, if they could be strictly confined to collecting spat.

1350. Would you not have a better check upon them if they had licenses than if they were without them: you could cancel the license if they did not stick to it? Yes, it might be done in that way.

1351. Do you not think, looking to the interests of the general public as well as to the interests of the oystermen, that it would be a mutual advantage, that a number of men should be able to earn a comfortable subsistence for themselves and their families by collecting the young oysters from the rocks and selling them for growing and fattening purposes? I think it would be better to reserve certain places for the purpose of collecting spawn, than to give them permission to go anywhere they liked. I would have certain places specially reserved for that purpose like Broken Bay or a portion of Shoalhaven, or the lower portion of Sydney Harbour.

1352. Do you see any objection to their getting spat off the rocks in Sydney Harbour or Middle Harbour? I think many private gentlemen would object to these men going in front of their places.

1353. But supposing those places were reserved, wherever, for instance, there was a wharf or jetty on private property, would you see any objection then? No, not in cases where it would not interfere with private property.

1354. Don't you think it would be the means of utilizing the large number of young oysters that are going to waste, besides providing valuable food? Yes, no doubt it would.

1355. Which will never become valuable as long as it remains where it is? No; there are places where the spat will grow; for instance, on the Parramatta River up to half-tide.

1356. Up to low-water-mark? I have seen fine oysters in the Parramatta River 2 feet above low-water-mark.

1357. But although some of the spat may live and become good oysters, there is a great deal of it that is lost? Yes.

1358. Which could be utilized if removed and planted on good laying ground? Yes.

1359. If it is found to answer well in France, as it is, and unlimited liberty is given there to persons to collect young oysters from the rocks, do you see why we should have more stringent regulations in this country? No, I do not see why.

1360. And are you not aware that in Kent, in the neighbourhood of the Whitstable Company's ground, on the Commons, there are men, women, and children constantly engaged in knocking oysters off the rocks as small as a threepenny bit, and selling them. Don't you think a similar system should be adopted here? I don't think there is any occasion for it here for a long time, because there is plenty of spat to last for a number of years.

1361. But you tell us that Captain Griffin was desirous of obtaining spat from the rocks on the adjoining lease in order to utilize it, and the lessee would not allow him. Do you think, then, that it is premature to adopt such a system? I think there might be reserves made in the different rivers on purpose to collect spat.

1362. Do you think it would be good policy to reserve a portion of every river, which should never be dredged, and from which spat should not be taken—a reserve solely for breeding? Yes, I think a portion should be reserved for breeding purposes.

1363. Are you aware that in France a portion—either one-fourth or one-fifth—is reserved by the Government for that purpose? Yes, I believe it is the case.

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1364. Then do you think it would be expedient to adopt a policy of that kind here, and to reserve either one-fourth or one-fifth, which should neither be open to the dredger or to the oystermen employed in knocking the oysters off the rocks? Yes, I think it would be; I think it would prevent disputes arising from persons taking spat off each other's ground. I think permission might be granted to take away a certain quantity, such as the Inspector might consider necessary for the purpose required, because a person might go to a place and take away oysters, and say they were for breeding, instead of which he might use them or sell them for eating.

1365. But would it not be desirable, in granting these licenses to take oysters off the rocks and mangroves, to limit them to a particular river, and not to allow the men to wander about from one river to another under one license? I think the licenses should be given for a certain time and for a certain river.

1366. Then in granting these licenses, would you allow, as they do in France, children of a certain age and unmarried daughters to be employed in collecting the spat? I don't know about the boys, but girls and young women I think ought to be left out.

1367. But if the parents go out, why should they not take their daughters with them? I hardly think that would be advisable.

1368. Are you aware that some of the witnesses examined here on a previous day recommended that licenses be issued to persons to get oysters off the rocks? I would sooner see them licensed to go on the rivers and get oysters by the bag than to get them in that way.

1369. I was coming to that. Do you not think it desirable to have two different kinds of licenses—one for those who dredge and another for those who knock the oysters off the rocks? I think a great many who had licenses to take oysters off the rocks would dredge; I don't see how you could prevent it. My idea is to reserve certain places especially for spawn.

1370. Do you see any objection to the Government alienating either by lease or sale small portions, say 20 or 40 acres, or whatever extent may be decided upon, and to let the holders have the exclusive right to the ground, either for a long term of years or for perpetuity? I should say for a long term of years, subject to improvements; I would not allow a person to take up a lease and do nothing with it.

1371. You are aware of the conditions in the Lands Alienation Act, are you not—that when a person makes a conditional purchase, one of the conditions is that he shall improve it to a certain extent within three years? Yes.

1372. Do you see any objection to the introduction of a similar condition into an Oyster Bill? No, I don't see any objection.

1373. That is to say, he holds the lease under a condition that improvements shall be made upon it, subject to the approval of the Minister, equal to those which would be required on dry land. How would that answer, do you think? I think it would answer very well.

1374. Now with regard to Crown lands on the shores; do you see any objection to conditional purchasers selecting land under water as well as dry land? No, I do not see any objection; I understand you to speak of places for artificially cultivating oysters.

1375. Yes, what I wish to know is whether it is not as desirable for the Government to encourage oyster cultivation as well as agricultural or pastoral pursuits? Yes, the only thing is that the law would have to be very stringent.

1376. Would it require a more stringent law than that now in force for the conditional purchasers on dry land? Well, you can see better what is done on dry land than you can under water, and persons would be taking oysters from their neighbors' ground.

1377. Could they not just as well steal from their neighbors' orchards or farms? Yes, but that would be noticed much quicker than stealing from an oyster bed.

1378. What depth would such beds be? They would vary from 3 feet upwards.

1379. At what depth can you see the bottom of the beds—4, or 5, or 6 feet? No, the water does not run nearly so clear on the northern rivers as it does in the George's River and about here.

1380. Then you think the great fear is that a person might be robbed and not know it? Yes; that has been the case with Captain Griffin on Limeburner's Creek.

1381. He has been robbed? Yes, repeatedly, and he knew nothing about it until he went over the ground and found it out.

1382. That deals with a separate question—the best mode of protecting the oyster beds—but it does not appear to me to affect the present question more than it does the protection of orchards or farm-yards. You may have read the other day the speech of a bishop who boasted of having robbed orchards when he was a boy at Parramatta. That can always be prevented. Do you think if proper protection were afforded and persons were allowed to select land under water as well as above water that oyster culture might be carried on in connection with farming? Yes.

1383. And that it would be very advantageous, as when a person was not employed in working his farm he might turn his attention to his oyster beds, and in that way increase his prosperity and happiness? Yes, a great many oysters might be grown in that way.

1384. You see no objection to it, except on the score of oyster-stealing? No.

1385. You think there is a great deal of stealing going on? Yes.

1386. What is your opinion as to the best mode of prevention: do you think that if persons were not allowed to remove oysters without a pass, as in the case of cattle and sheep, the practice would be checked? Yes, that has been an idea of mine for a long time past—that the men should all be licensed and the boats marked. I think all the men employed by the lessees to remove oysters should have a permit.

1387. Is not the receiver, knowing the goods to be stolen, as bad as the thief? Equally, if not more so.

1388. Is it not possible to put a stop to this stealing to a great extent by issuing licenses to these oyster-dealers, and obliging them to do the same as the butchers are compelled to at slaughter-houses—keep a record of all that they purchase from the oyster merchants? Yes, I have had that idea for some time back.

1389. Just carrying out the same precautions which are adopted in connection with cattle and sheep? Yes, or something similar to them.

1390. Don't you think a great improvement could be made in the Oyster Act by adopting the precautions which are provided in connection with other industries; for instance, for cutting timber a license is required, and for getting oysters off the rocks a license would be required; with respect to the driving of cattle or sheep a pass is required; with respect to the removal of oysters from one place to another a pass would be required; also, for slaughtering cattle and sheep a license is required; and a record has to be

be kept; so in respect to the sale of oysters, a license would be necessary as well as a record of all oysters purchased. If these precautions were carried out, do not you think oyster-stealing, and also the sale of improper oysters, might be put a stop to? Yes, I think so.

Mr. W. J.
Langham.

21 Nov., 1876.

FRIDAY, 24 NOVEMBER, 1876.

Present:—

HON. J. B. WILSON,

J. S. FARNELL, Esq.

THE HON. THOMAS HOLT, M.L.C., IN THE CHAIR.

Mr. George Haiser called in and examined:—

(Some fresh samples of oysters were exhibited.)

1391. *Chairman.*] Have you had any experience in oyster culture, Mr. Haiser, either in this Colony or in Mr. G. Haiser. Europe? Yes; in this Colony.

1392. For how long? About twenty years.

1393. In what part of the Colony? On the Clyde and Tross Rivers, and on Durass Lake, and also on the Tomago. I have also dredged on several creeks to the north of Bateman's Bay.

1394. Have you known all those rivers for twenty years? I have worked on them, sir.

1395. What was the stato of those rivers at that time? Very good, sir.

1396. And what state are they in at the present time, as regards the oyster beds? In a very poor state.

1397. They have fallen off very considerably during that time? Yes.

1398. With regard to the quality of the oysters, are they equal now to what they were twenty years ago, in size and meat? The meat is equal and the dredge oysters are as large, but the bankers, which used to be as large as the dredge oysters, have fallen off a good deal, and are not nearly so large now.

1399. The object of my question was, to ascertain whether they are inferior in quality as well as in quantity, to what they were twenty years ago? Yes.

1400. And to what do you attribute this—to over-dredging? To taking them away constantly to market without saving the young ones.

1401. Taking them to market before they were full-grown? Yes.

1402. In an immature state? Yes; it does not matter to them—they take them off just as they come.

1403. Have many of the oysters on those rivers been burned for lime? Yes, a great many.

1404. And that partly accounts for the decrease in quantity? Well, I would not exactly say that the lime-burning accounts for it.

1405. Partly, I suppose? Yes, partly.

1406. Are all these rivers which you have mentioned leased at the present time? Yes, the Clyde, Tross, and Durass Lake; the Mornya and Tomago are closed, and also the Cullendulla.

1407. What was the state of those rivers before they were leased? Very good.

1408. Then the lessees have not improved them, have they? I cannot see it.

1409. Are they in a worse state than they were when they were first leased? Well, I have not examined them lately, and I could not say.

1410. *Mr. Farnell.*] Do you know as a matter of fact whether they are better or not? No, I do not.

1411. *Chairman.*] Do you know whether the lessees have removed large quantities of oysters from them? Yes, at times, when the market requires them they come in plentifully.

1412. Can you tell the Commission what kind of oysters have been removed—were they full-grown or very young? All sizes.

1413. Are you aware that in England they have different names for the oysters according to their size, in the same way that cattle of different ages are called calves, heifers, steers, and so on; thus, oysters one year old are called spat, at two years old they are called brood, at three years ware, and only when they are four years old are they called oysters and considered marketable? Yes.

1414. Now, what age were these oysters that were removed by the lessees from the rivers you speak of? It would be rather a difficult matter for me to say.

1415. Have there been any brood or ware, that is two or three year old oysters, taken away? Yes, I believe so.

1416. Have many of them been taken? Yes.

1417. And are there many taken away at the present time? I could not be certain, without going there to see; but I know that when I worked on the rivers before they were leased, there were very nice oysters growing on the rocks, and they have fallen off since, and are now something similar to the oysters now exhibited. The shells are very tender, and you have to be very careful in taking them off. When they take them off they don't look much to the age of the oysters, but how they can get a bag of them.

1418. What is the nature of the banks and beds of those rivers—are they rock or soil chiefly? There is gravel and mud and sand.

1419. Are there many young oysters sticking to the rocks, where there are rocks, or to the mangroves in the swamps? Yes.

1420. A great many? Yes.

1421. Do the lessees make any use of them? If they are large enough they send them to market.

1422. What do they consider large enough or old enough? Something similar to those now exhibited.

1423. How old do you think they are when they send them to market? Well, to the southward they don't breed so fast as they do to the northward. It would take fully five years on the Clyde before they could possibly be sent to market.

1424. Before they were full-grown? Yes.

1425. And do the lessees wait till they are five years old before they send them to market? I could not say that.

1426. Can you give us any idea of the age of the oysters when they are removed from the rocks and mangroves? It would be impossible for me to say without continually watching them.

1427. Well, now, as a rule are these spat which stick to the rocks and mangroves utilized? Well, when they work among these mangroves they smash these small oysters, so that they are wasted.

- Mr. G. Hauser. 1428. Would it not be possible to save them and to plant them on good ground so as to make them marketable oysters? Yes.
- 24 Nov., 1876. 1429. Then there is a great waste of young oysters? Yes.
1430. Do you think it is desirable in the public interest to lease these oyster-bearing rivers in such large blocks as are leased at the present time? I should think not.
1431. Do you think that if persons were licensed to get oysters off the rocks and mangroves, and licensed also to dredge for oysters, that it would conduce to the public interest and provide employment for a large number of persons? Yes, it would give employment to a good many, and each man could lay down the small stuff and cultivate the oysters, which is not done at present. There are plenty of places where if this small stuff was laid down natural beds would be formed, and that is what is wanted.
1432. Do you think also it would be desirable that the Government should alienate suitable places for fattening purposes, where the young oysters could be laid down to grow and fatten? Yes, that is my view of it.
1433. You think that would be desirable, and that it would increase the production of oysters? I think so.
1434. Do you think it would cheapen the price to the consumer? Yes.
1435. And that it would give a great deal of employment to dredgers and others having layings suitable for young oysters, besides largely increasing the supply of wholesome food for the public? Yes, sir, that is my opinion. Some years ago when I used to work on the rivers and I had seven or eight men working for me, I used to save the small stuff and place it on nice shingly beach; and after a certain time—about two years afterwards—I used to have nice little beds there that looked splendid.
1436. What do you think would be a reasonable fee to charge oyster-dredgers and oyster-gatherers from the rocks and mangroves, and also for the use of licensed boats? Including them all?
1437. No, separately; say the oyster-dredgers, for instance; do you think £2 or £3 would be too much? No.
1438. You think £3 a year would not be too much for dredging? No.
1439. Would you suggest that the boats should be numbered, so that no foreign boats could be used in the trade? Yes.
1440. Would you suggest that a small fee should be charged for licensing each boat—say £1, £2, or £3? That would make it rather heavy.
1441. Is it desirable, do you think, to take any notice of the boats at all for the protection of the trade? Oh, yes; by giving licenses and numbering the boats.
1442. Then what do you suggest as a reasonable fee for those who take oysters off the rocks and mangroves? I think there should be no difference; I think one should be as much as the other.
1443. You would have them each £3 a year? Yes.
1444. And you think they would make a comfortable living paying a license fee of £3 a year? They would.
1445. Do you think that fee should include their families, their wives, and children up to a certain age? Yes; sometimes it would be rather awkward if a man had big strapping sons.
1446. I was merely speaking of the general principle. I may mention what I had in view. The rule in France is that the wives, and unmarried daughters and sons under fifteen years of age, are included. Do you think a similar regulation would be suitable to this Colony, and that a license fee of £3 a year should comprise the wives, and unmarried daughters and sons under fifteen years? I should not like to recommend it.
1447. What would you suggest then—it is only a matter of detail? I think that every man having a boat should pay a license fee; but if he has a man with him, it is a question whether you should license the two men or the boat.
1448. What would you suggest? I would suggest that every man who goes in the boat should pay £3.
1449. And you think they would not object? No.
1450. And the effect of this would be to give additional employment to labouring men and their families, and also to cheapen the price of oysters? It would.
1451. Do you consider oysters wholesome food? I do, sir.
1452. Are they generally eaten as food to your knowledge by the labouring classes? Down our way where they cannot get meat plenty of families live on them; but now the rivers are leased, they are prohibited from using them. They are threatened with the law, and of course they cannot get them unless they do it when they are not seen.
1453. Unless they steal them in fact? Yes.
1454. But formerly they almost lived upon oysters? Yes, a good many families.
1455. You have not had sufficient experience of large towns like Sydney to say whether they are a common article of food among labouring families? No, I could not say.
1456. *Hon. J. B. Wilson.* Are any of the natural beds in the rivers you have mentioned still productive and in good condition? Yes.
1457. Are they in as good condition as they were formerly? No.
1458. Is their deterioration produced by over-dredging? Yes.
1459. Do the lessees of these rivers take any pains to return the young oysters or ware to the beds when they are taken out, or do they take all the oysters to the bank and sort them and leave the young oysters to die? That is the general custom. They cull them on the bank; sometimes they cull them in the boats.
1460. Do the lessees as a rule pay much attention to the oysters, or do they employ men to get them at so much a bag? They employ blackfellows and others to get them by the bag.
1461. And they do not care where they get them or how? No.
1462. You have stated, in answer to the Chairman, that some years ago you laid down young oysters in certain localities, and that they grew and fattened in about two years? Yes.
1463. What was the nature of the soil on which you laid them? It was a shingly beach close to the mud.
1464. That is to say, the banks were mud, although under water it was a shingly beach? No, the banks were shingle, but a little way from low-water-mark it was mud.
1465. Were these young oysters laid down in a locality where much fresh water mixes with the salt, or in purely salt water? In purely salt water.
1466. Have you ever known oysters to grow and fatten in the sea without an intermixture of fresh water? Yes, I have sent oysters to market that came from outside the bar, which grew entirely in the open sea on the rocks among the bumborers.
- 1467.

Mr. G. Haizer.
24 Nov., 1876.

1467. Were they of large size? Yes; nice, cuppy oysters.
1468. Are there many places on the Clyde or Tuross Rivers where artificial oyster beds might be formed; and where, if oysters were laid down, they would thrive? Yes.
1469. Are there any of these swamps that you think would be suitable for the formation of artificial beds? Yes, plenty of them.
1470. If these swamps were leased for a sufficiently long term of years to encourage the lessees to lay out money upon them, how many acres do you think should be comprised in one lease? About 5 acres I should think.
1471. Do you think 5 acres cultivated in that way would give a sufficiently good living for a family? Yes, after the first three or four years.
1472. Have you ever thought what length of lease ought to be granted by the Government in order to thoroughly remunerate these persons for their outlay of time and money; do you think thirty years would be too long? No, I think it should not be less than twenty or thirty years; a great deal of money has to be spent on these places, and a man would get nothing out of them in less time than that.
1473. And you think a lease of thirty years would not be too long? I do.
1474. Supposing the Government should decide upon leasing these swamps in that way, do you think there are many persons of sufficient enterprise who would be willing to lease them, and to go into the business? Oh yes.
1475. There are a great many of these swamps about the Tuross River and the other localities you have mentioned, are there not? Yes, a great many about the Tuross, and a great many about the Clyde River, as well as all the rivers I have named.
1476. Are these swamps pretty much of a black clay soil? Yes, black clay.
1477. Have you any idea of the depth of that soil? It is very deep.
1478. But still not so deep but that a bottom could be formed by laying down shells and stones, or other material; there would be no difficulty in doing that? No.
1479. Has any person, as far as you are aware, attempted to make oyster farms in your part of the country? No. I intended several times to cut a trench into my ground, but I was afraid of being interfered with.
1480. By whom? Mr. Gibbins.
1481. Then you have some land down there? Yes.
1482. And you think it is suitable for the cultivation of oysters? Yes.
1483. And the only difficulty is the digging a trench to allow the salt water to get to your ground? No, there is no difficulty about the trench, but Mr. Templeton, a neighbour of mine, laid down some oysters on his land, and the lessee, Mr. Gibbins, claimed them as his property.
1484. Do you think that if these rivers, the Tuross and the Clyde, were closed for a year, the beds would improve? Of course they would get larger.
1485. They were closed for some time, were they not? No.
1486. Not the Tuross River? No. I always found that the oysters will grow best the more you work them. The rock oysters grow very thick, and when they are separated they have more room to grow.
1487. When do the oysters spawn on the Clyde? Generally between January and February.
1488. Do they spawn more in January and February than in other months? Yes.
1489. Then you would say that January and February are the spawning months on the Clyde? Yes.
1490. Do they spawn during the same months on the Tuross? That depends upon how the beds are situated. If the morning sun plays upon them they spawn much sooner than they do in beds which are shaded and do not get the sun till mid-day.
1491. But, generally speaking, the spawning time is the same on the Tuross? Yes, about the same, or a little later.
1492. Do you think that oysters spawn at the same time throughout the Colony? I do.
1493. *Mr. Farnell.* You say that you have been dredging oysters some twenty years ago? Yes.
1494. From what rivers? From the Tuross, the Clyde, Durass Lake, Tomago, and Cullendulla.
1495. Did you dredge these oysters for the market? Yes.
1496. How many men did you employ? Sometimes five or six, sometimes less.
1497. How many years were you dredging in this way? About fourteen years at all events.
1498. You were dredging the natural beds? Yes, in deep water.
1499. Did you ever lay down young oysters on these natural beds? No, not on the natural beds.
1500. Then did you dredge them from the natural beds and put them elsewhere to grow and fatten? No; when the market was glutted I would dredge them and lay them down on any suitable place where I could take them up easily for the market.
1501. Then you have never done anything in the cultivation of oysters? No. Sometimes I laid down small stuff, but I did not make a practice of it.
1502. How old were the oysters you laid down? About twelve months old.
1503. How many did you lay down at a time? That is more than I can remember. Perhaps a couple of bags of culled oysters.
1504. Then you used to cull the small oysters from those you dredged from the natural beds, and then lay them down? Yes.
1505. Where did you lay them? On a shingly beach.
1506. What would the culling amount to? About a couple of bags.
1507. A couple of bags per day? Yes, every evening that I had been dredging.
1508. What was the extent of the beach? There was a frontage of about half a mile.
1509. By what width? About 10 feet.
1510. Did you occupy the whole of the ground with these culled oysters? No; we had an understanding amongst ourselves that we should not interfere with each other.
1511. How many persons were there, besides yourself, who made use of the beach? I should say there would be fifteen or twenty in different places. Of course we kept them separate.
1512. Now, do you know that at any one time this beach was ever strewed with oysters that had been culled? No, sir.
1513. How long did you allow the oysters to remain there? Until such time as I required them for the market.
1514. I want some definite information as to the time you left them there? I can only make a guess.

- Mr. G. Haiser. 1515. Did you leave them for a month, or a year, or two years? Two or three years. I never expected this small stuff to grow much; I simply threw them down to see what they would come to.
- 24 Nov., 1876. 1516. They were the cullings of the oysters which you dredged from the natural beds? Yes.
1517. And you never expected them to grow large, or looked upon them as a source of profit? No.
1518. Are you engaged in dredging oysters now? No.
1519. How came you to give up that occupation? On account of the rivers being leased.
1520. Have you applied for a lease or sent in a tender at any time? I have applied at different times for four places.
1521. Now what state was that river in at the time you dredged it for oysters? In a very good state.
1522. What do you call good? I call four bags a day good.
1523. And how many bags could you get in the day when you first commenced? Sixteen.
1524. And you got four bags a day just before it was leased? Yes.
1525. And the other rivers were just in the same state? Yes.
1526. Do you know in what year these rivers were leased? About '73 I think.
1527. Do you know what they have been producing—the rivers you have been working on—before they were leased? I could not say exactly; I have seen a great many oysters sent away from them.
1528. You do not know, as a fact, whether they have improved since they were leased? No.
1529. You have had no experience whatever in the cultivation of oysters? No, I never tried it.
1530. You have only taken them from their natural beds? That is all.
1531. Referring to your answers to Mr. Wilson about the swamps: have you a salt-water marsh belonging to you? Yes.
1532. Is it extensive? It is.
1533. What height of tide goes over it—is it dry at low-water? Yes.
1534. At ordinary times what depth of water is there? About 2 feet.
1535. And at spring tides? Of course there is more at spring tides.
1536. *Chairman.*] And you have been deterred from improving this marsh in order to lay down young oysters to grow and fatten from fear of the lessee of the Tross River, Mr. Gibbins, interfering with you? Yes.
1537. Because he has interfered with a neighbour of yours who had laid down oysters on the swamp and had claimed them himself? Yes.
1538. *Mr. Farnell.*] Is the marsh your freehold property? No.
1539. Does your property adjoin it? Yes.
1540. Have you made application to purchase it? No.
1541. Then it is to all intents and purposes Crown land? The tide goes over it.
1542. Yes, but that does not give you a right to it—you have not purchased any freehold over which the tide flows? No.
1543. *Chairman.*] If the lessee had not interfered with you, what would you have done with this swamp? I should have cut a couple of trenches to let the salt water flow in and out of it.
1544. Did you ever hear of that being done? Yes.
1545. Where? On the Moruya.
1546. Will you be kind enough to describe what you have seen? They have a salt-water marsh there, and they lay down oysters in it and let the tide flow in and out of it.
1547. Do the oysters grow and fatten there? Yes. I admired the idea, and would have done the same thing with the marsh at my place.
1548. Are you aware that that is carried on to a great extent in France; that they take what you call trenches, but what they call clairs, to oyster grounds? I have heard of it, but I never knew anything about it before.
1549. Dr. Wilson has asked you some questions about a lease for thirty years. Do you think it would encourage persons to cultivate more, and to expend more labour and capital on oyster culture, if they were allowed to purchase the fee simple of the land to a limited extent, so that it might descend from father to son for generations, or even centuries? I think it would.
1550. Do you see any objection to persons being allowed to purchase land covered with water which is not required for navigation? No sir, I do not.
1551. Would not that have a beneficial effect in the improvement of the district, besides causing a considerable increase in the production of oysters? Yes, it would give employment to a good many persons.

WEDNESDAY, 29 NOVEMBER, 1876.

Present:—

HON. J. HOLT.

HON. J. B. WILSON.

THE HON. THOMAS HOLT, M.L.C., IN THE CHAIR.

Mr. William John Langham, Inspector of Oyster Beds, called in and further examined:—

- Mr. W. J. Langham. 1552. *Chairman.*] You have given us evidence in respect to many of the rivers that are leased, but not the whole of them? Yes; the others are only small places.
- 29 Nov., 1876. 1553. What are the leased rivers of which you have not given us any information. To begin with the Parramatta River, is any portion of that river leased? There are two small leases on it.
1554. To whom are the leases granted, Mr. Langham? One is to Mr. Gascoigne, and the other to Mr. Baldwin.
1555. What are the areas of those leases? They are only small frontages. One of them is about 1½, and the other 2 or 3 acres.
1556. They are both frontages to the properties of the lessees? Yes.
1557. Are these leased portions of the river buoyed off in any way? No.
1558. What rent do the lessees pay for them? About £1 each, or a little more. I think there is no difference between them.
1559. And you say they are not buoyed off? No, there are a few stakes round Mr. Baldwin's place, that is all.
- 1560.

1560. Then there is nothing to warn the public off—nothing to show that those portions of the river are leased to Messrs. Gascoigne and Baldwin? No.
1561. What is the nature of the soil? Sandy and rock.
1562. There is no rich mud? No.
1563. What is the term of the leases? Ten years.
1564. The leases are issued under the Act 31 Victoria, No. 20, are they not? Yes.
1565. Have the lessees made any improvements? Yes. Mr. Baldwin has done a little: he has put down some stakes and some brushwood, but the oysters do not seem to grow upon it to any extent. I imagine that the bottom is too sandy.
1566. Has he tried to breed there, or rather to collect spat? Yes. Mr. Gascoigne gets a few off the rocks; it is chiefly to the sandstone rocks that they attach themselves.
1567. Has Mr. Baldwin tried to lay down oysters to grow and fatten? Only a very few.
1568. And the other lessee, Mr. Gascoigne, has he tried it? No. He gets them chiefly off the rocks in front of his place.
1569. That is his object then in renting the portion of the river in front of his place? My idea is that his object is to get oysters from other parts of the river, and that he uses this place as a cloak. For instance, the other parts of the river are closed, and if he goes away at night and gets oysters, there is no way under present circumstances of making him show where he got them from.
1570. Then, in your opinion, these leases are a mere blind to enable the lessees to get oysters from other portions of the river which are closed? Yes.
1571. Do you think it is desirable to lease isolated portions of a river in this way? No, I think it is a mistake myself; I think the areas of these leases are too small, and I think also that the law is not sufficiently severe, because, even if they are caught, they have only to pay a fine of ten shillings or a pound at the Police Court, and it pays them to do that.
1572. Is the soil sandy in both places? Yes, it is a sort of drift sand with a slight touch of mud in it; the ground is loose.
1573. It is not at all suitable for fattening oysters? No, I don't consider it so.
1574. You have not told us anything about Mr. A. R. Emerson's lease, from the embouchure of George's River to Botany Head. Has he two leases? Yes, they are leased by the same person. It was his brother who gave evidence here.
1575. Is there any of the Cook's River land leased? Mr. George Lord has a small frontage opposite his place; he has only lately taken it up.
1576. What is the area of his lease? It is the frontage to his property; I could not say exactly what the area is—about 4 or 5 acres.
1577. What rent does he pay? £1 a year.
1578. Does he make use of it? He told me the other day, when I met him in the street, that he had been laying down some spat; but I have not been there lately myself; it is only a small sandy beach with a little mud.
1579. Well, you have now told us all about the leased rivers; now tell us about the rivers that are not leased. What about the Richmond River? That is not leased.
1580. Is it a closed river? Yes.
1581. What is the extent of the Richmond River? I have no idea; I have never been there.
1582. Then you cannot give us any information with regard to the soil; whether it is good fattening ground or not? I know there are quantities of oysters there; I have had samples sent up from it.
1583. How long has it been closed? Some few months—eight or ten months.
1584. Do you know anything of the Bellinger River? Yes, that is a closed river also.
1585. Have you ever been there? Yes.
1586. Are there many oysters there? Well, not a very great quantity; but they are fine oysters, what there are.
1587. What is the nature of the banks and the bed of the river? It is rich alluvial soil mostly; the oysters are chiefly in the bed of the river, in what is called the south arm.
1588. And are the oyster beds there extensive? No, they are no great size, only small patches; there are seven or eight patches in it that I know of.
1589. Do you think many oysters are stolen from these closed rivers? Yes; but of course the Bellinger River is a bar river, and the steamers cannot get up it.
1590. Then there is the Nambucca, is that a closed river? Yes.
1591. Have you ever been there? No.
1592. The Tweed River, do you know anything of that? That is a closed river.
1593. Have you ever been on it? No.
1594. Then you can give us no information about it? No.
1595. Do you know anything about the Tomago River? Yes, I have been there.
1596. What are its banks composed of chiefly? Alluvial soil, mostly mud banks, with a great many mangroves.
1597. Are there many oysters on the mangroves? No, very few.
1598. It is not a river which produces many oysters? No.
1599. The next is the Wogonga River; have you been there? Yes.
1600. What are its banks and its bed composed of? Most of the oysters there are rock oysters; there are a few mud oysters; the rock oysters are very fine.
1601. Is there a great deal of spat sticking to the rocks? A great deal, in places.
1602. And no use whatever is made of it? No.
1603. Do you know anything of the Bernagoe River? No.
1604. You have never been there? No; it is only a small place.
1605. The Pambula River, have you been there? Yes.
1606. Of what do its banks and bed consist? Shell banks, formed with mud oyster shells, and there are oysters on the rocks.
1607. Are there many small oysters sticking to the rocks? Yes, upon two or three of the points there are a good many.
1608. Are there any mangroves there? There are mangroves, but I did not notice many oysters attached to them; there is a large mangrove swamp there. There used to be chiefly mud oysters there, very large mud oysters, but when I went there almost all of them were dead.
- 1609.

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1609. What was the cause of that; did the floods kill them? I cannot say; they had been dead for some time. I was told by a man there that he had tried at different times within the last two years, and could not find any.
1610. But there are a good many oysters on the rocks? Yes.
1611. Do you know Tilba Tilba Lake? I have never been there.
1612. Or to Towamba Lake? No.
1613. Then you can give us no personal information about them? No.
1614. Have you been to Jervis Bay? Yes; there are one or two small beds there, that is to say, in the creek that runs into the bay.
1615. What are banks of Jervis Bay? Rock chiefly.
1616. Are there many small oysters sticking to them? Yes.
1617. Is any one allowed to take these small oysters off the rocks? No, not at present.
1618. Or from any of the closed rivers, or from the rocks at Port Jackson? No.
1619. Would you consider it your duty to prosecute a person if you saw him taking oysters off the rocks? It would depend upon who he was; if he were taking them for sale I should, but not if it was a gentleman or any one at a picnic party for instance. My instructions are not to prosecute in such cases.
1620. Do you know Twofold Bay? Yes.
1621. What are the banks and beds there? There is no river; it is an open bay.
1622. Are the banks rock or mud? Rock and sea sand.
1623. Are there many oysters sticking to the rocks? No, not a great many now; it is an open roadstead.
1624. Twofold Bay is not celebrated for its oysters, is it? No.
1625. Now we come to Port Hacking: what are its banks composed of? Chiefly rock.
1626. And the bed of the river? What I saw of it was rock and sand chiefly.
1627. Have you ever been there at low tide? Yes.
1628. Did you see many oysters sticking to the sides of the rocks? Yes, great quantities of them. I think that Port Hacking, as a rule, is only a place for breeding spawn; I never saw any oysters in deep water there.
1629. And what is the extent, do you think, of Port Hacking, where there are so many oysters? I should hardly like to say; it would only be a mere guess.
1630. But there is an immense quantity of spat there? Yes.
1631. Which is going to waste? Yes, no use is made of it.
1632. And it is a closed river? Yes, it is closed to prevent persons from bringing oysters taken out of George's River and other places under the pretence that they come from Port Hacking.
1633. Then it is not closed for the protection of the oysters at Port Hacking? Partly it is, but chiefly in order to prevent persons who have neither lease nor license from stealing oysters and taking them into Sydney.
1634. To protect the lessees. Was it at their request? I believe so.
1635. Do you know who applied to have it closed? I think Mr. Emerson was one of them; the other lessees also complained of oysters being brought into Sydney.
1636. From Port Hacking? No; the persons who brought them in pretended that they got them from Port Hacking, but the oysters were not like any I have seen there.
1637. Do you think it desirable to close a river for the protection of oyster beds in other rivers? Yes, at the present time when there is only one Inspector, and the law does not make any provision to compel persons to show where they get the oysters from which they bring into Sydney. You cannot charge a man with stealing them, although you know that he has no lease or other authority to take them.
1638. But if you met a man bringing in oysters, you could not stop him without some good reason? Well, if a river is closed and you can prove that they come from that river, of course it is stealing.
1639. Port Jackson, Middle Harbour, Lane Cove, and the Parramatta River are all closed, are they not? Yes; I think Mr. Josephson claims the frontage to his place in the Lane Cove River.
1640. Will you describe these places. To begin with Port Jackson—are there many young oysters on the rocks in Port Jackson? Great quantities of them.
1641. Is any use made of them? Not at present.
1642. The Government make no use of them themselves, and will not allow any one else to do so? No, not at present.
1643. What object have they in closing these places? It was done with the view of preventing persons from stealing oysters out of the other portions of the rivers. When persons were found with oysters in their boats they said they had got them from Bradley's Head, Middle Harbour, and so on, and there was no means of proving where they came from.
1644. But on the Parramatta River there are only two small leases. Is it desirable that the whole of Port Jackson should be closed on account of those two small leases? It is not only for them, but for the protection of the other lessees.
1645. To whom do you refer? To the lessees of other rivers, who complain that persons without lease or license of any kind are bringing oysters into market and competing with them who are paying a heavy rent for their rivers.
1646. Now, Mr. Langham, can you give the Commission any idea of the value of the oysters consumed in this Colony, and the value of those exported to Melbourne and elsewhere? From the whole of the beds?
1647. From the Colony generally? About 750 bags, averaging 3 bushels each per week, come into Sydney. Of this quantity about 400 bags go to Victoria, and of the total quantity (750 bags) about 150 bags come from Queensland, leaving about 600 bags produced in this Colony.
1648. You showed us on a previous occasion some very small oysters which you bought in the shops. Are many of these very small oysters exported to Melbourne or elsewhere? Yes; not so many to Melbourne, because the Melbourne people don't care about them—they won't fetch the price there; the best oysters are generally sent to Melbourne.
1649. Do you think it is desirable that such small oysters should be sold? No, I do not.
1650. Do you think the sale of such oysters should be prohibited by law? Yes.
1651. Can you offer any suggestion as to the best way of bringing this about? My idea would be to have a gauge, or something of that sort.

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1652. You have heard several witnesses examined before this Commission object to a gauge on the ground that oysters may have a small shell but a large fish, and we have been told that some oysters do not grow to a large size? We could have gauges of different sizes. I do not say that every oyster in a bag should be ganged; that is a matter which should be left to the Inspector.

1653. What do you think of this plan,—that the oysters should be submitted to Magistrates, and if they found them to be mere skin and water they should condemn them in the same way that unwholesome fish or meat are condemned? Yes, but that would be difficult; the oysters might be sound, though skinny and watery. I don't think the Magistrates would be able to tell what they were.

1654. You have misunderstood my question. I say supposing they were nothing but skin and water—suppose a working man buys oysters for his dinner, and there is nothing in them to satisfy his appetite; I ask you whether such oysters should not be condemned without being passed through a ring? Yes, I think the Inspector should condemn them.

1655. Has the Inspector at present power to condemn fish which he considers unfit for food? Well, he might take them before a Magistrate.

1656. And he should condemn them as being nothing more than brood or ware? Yes, it might be done in that way.

1657. Don't you think that if good oysters only were allowed to be sold the consumption of oysters in the Colony would be greatly increased? Yes.

1658. And that the sale of these oysters—which are in reality, according to the English nomenclature, no oysters—injures the oyster trade? Yes, it does. My idea would be that the Inspector should see them on the wharf and take them before a Bench of Magistrates, or some other authority, to know what was to be done with them.

1659. And if the Magistrates found them to be unsuitable for food, they could order them to be placed in some river or suitable place where they would grow to their proper size? Yes.

1660. You think that would have a beneficial effect upon the oyster trade? Yes.

1661. And that it would encourage persons to buy them for food, which they do not at present, because there is no food in those they purchase? Yes.

1662. Now, with regard to the price of oysters. Do you not think that the present monopoly of the beds increases the price immensely to the consumer? Yes, there is no doubt about that; the leaseholders can rule the market if they like at the present time.

1663. At what price do you think oysters could be sold per dozen so as to leave a fair margin of profit? It is seldom I have had anything to do with them by the dozen; it has generally been by the bag on the rivers.

1664. Have you any idea of the number of oysters in a bag? That depends upon the river they come from.

1665. Take full-grown oysters of the largest size—how many are there in a bushel? I should think about twenty dozen of good-sized oysters.

1666. You are very much mistaken. In England it is estimated that there are 1,500? Well, they cannot be the same kind of oysters, or they must lie much closer than those we have here.

1667. In England it is estimated that 5,000 brood, 2,000 ware, or 1,500 oysters go to a bushel. At what price do you think oysters could be supplied, so as to be food for the working classes as well as a luxury to the rich? At about 4s. a bushel, I should think.

1668. And how many would you calculate to the bushel? About twenty-five to thirty dozen; it would all depend upon where they come from; in some cases there would be more; I am speaking of large-sized oysters.

1669. That is scarcely 2d. a dozen. Do you think they could be sold to working men at a profit, at 4d. a dozen? I think about 6d. a dozen.

1670. Large-sized oysters full of meat? Yes.

1671. And with about a couple of dozen of such oysters a man could make a hearty meal? That would depend upon who it was.

1672. I am speaking of an average meal according to the general scale of rations for a working man? I have seen some gentlemen eat five or six dozen; but I should think two dozen would be a very fair meal.

1673. Then a person could make a very fair meal for about a shilling? Yes.

1674. But what would a meal of that sort cost at present? About two shillings at present, and if they had not got large oysters they would fill up the plate with small ones.

1675. Such oysters as they sell at the present time, would there be twenty-five or thirty dozen to the bushel? No, a great many more; I am not speaking of oysters like those.

1676. But how many of such oysters as an oysterman would supply would it take to fill a bushel; such oysters as they sell in the shops at 1s. a dozen? At a rough estimate, I should say about 600 or 700.

1677. My object is to see how much more consumption there would be if the oysters were sold at a reasonable price. Are you acquainted with the mode of oyster culture adopted in any other part of the world? No, only in this Colony.

1678. Only from what you have heard about it? Yes; I have read a good deal on the subject.

1679. Can you conceive any country more suitable for the cultivation of oysters in respect to climate and natural advantages than this is? No, they should grow remarkably well here.

1680. Do you think it would be possible to make oysters the cheapest food in the Colony—to produce fat, full-grown oysters in such quantities that they should be as cheap food as beef and mutton? I dare say it might in one point of view, but that is a question on which I hardly like to offer an opinion. Of course they would not go so far as beef and mutton.

1681. But with regard to the quantity of spat, there could be nothing better than the provision made by nature to cover the rocks so profusely? No.

1682. There can be no doubt about the supply of young oysters? No.

1683. And if taken care of they would become large and fat oysters? Yes.

1684. And what labour or expense would that involve? The chief trouble would be in laying them down.

1685. But there is little or no trouble in getting them after they have been laid down? No, not the slightest.

1686. Are you aware of the trouble and expense they go to in England to get the oysters when they are laid down? Yes.

1687. Are you aware that in Whitstable they pay 12s. to 14s. for merely dredging them? Yes, I believe so.

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1688. Then when they pay such an enormous sum for merely getting them out of the water, of course they cannot sell them so cheaply? No.
1689. And they have also to dredge the beds continually in order to get rid of the enemies to the oyster? Yes, they are all the better for being turned over occasionally.
1690. Are you aware that in England, Ireland, and Scotland the greatest difficulty they experience is in saving the spat? Yes.
1691. That sometimes for ten, twelve, or even fifteen years no quantity of spat can be saved? Yes, I have heard so.
1692. And are you also aware that in England, Ireland, and Scotland, unless the oysters are covered to a considerable depth, say 4 feet of water at low-tide, the whole of them are frequently killed by the frost? Yes.
1693. But you have never known oysters in this Colony to be killed by frost? I have known them to be killed by frost in a boat.
1694. In this latitude? No, to the southward. The oystermen here in the winter-time generally cover the oysters over in their boats to keep the frost off them.
1695. But I am speaking of oysters under water. You have never known them to be killed by frost in this country, even if dry at low-tide? No.
1696. Therefore the spat costs nothing except the trouble of collecting, and there is no trouble in getting them from the fattening grounds except putting them into the boats? No.
1697. Then with all these advantages, don't you think oysters in this country should be plentiful and cheap? Yes, they should be cheaper than they are.
1698. Do you attribute the present high prices to the monopoly of the rivers by a few persons? Yes, partly; and partly to the rivers being overworked, and the oysters scarce.
1699. Have they not been chiefly overworked in order to burn the oysters for lime? Yes; but that has not been done to any extent within the last few years.
1700. But you have told us of several rivers where the rocks are still covered with spat? Yes.
1701. So that they cannot have been injured by overdredging? No, not the bank oysters.
1702. What, in your opinion, has been the effect of closing the rivers upon the character of the oyster beds: have they improved? They have in some cases; but no one has been in charge of them, and the oysters have been taken away to a considerable extent. There has been nothing to stop it, except when the police have caught a person robbing the beds, or some one has given information, which has been very seldom the case, because no portion of the fine goes to the informer.
1703. *Hon. J. B. Wilson.*] So that, although the rivers have been closed by the Government, they have in reality been worked? Yes.
1704. And consequently there has been no opportunity for the oysters to breed? No, very little.
1705. How many Inspectors do you think would be required to protect the whole of the leased rivers properly—I mean from the Tweed down to the Victorian border. How many rivers do you think one man could look after—could he look after more than one? Yes, more than one in some instances. In some rivers, for instance, where there are bar harbours and the steamers do not trade. It is chiefly where there is steam navigation that protection is required.
1706. Do not persons send oysters down by these timber vessels? They do in a good many instances.
1707. How many Inspectors do you think would be required to protect the oyster-bearing rivers generally; a dozen? Less than that. I think about six Inspectors would do it.
1708. And do you think the services they would render would be of greater value than the remuneration they would receive; that is to say, that it would pay to appoint Inspectors to look after these rivers? I think so. Where there are only sailing-vessels on a river it is far easier to look after the oyster beds than where there is steam traffic.
1709. Do you think these six Inspectors would be able to look after the leased beds to see that the provisions of the Act were being carried out—would they be able to do that also? I think so, with the exception of places that were closed. It would take one person's whole time to look after a closed river.
1710. Do you think there would be any difficulty in introducing into the lease a provision to compel the lessees to return the beds to the Government at the expiration of the term of lease in a certain prolific state? I do not think so.
1711. You think it would be an advantage to introduce such a provision into all the leases? I think it would.
1712. In the way these areas are leased at the present time there is every inducement to the lessees to destroy the beds absolutely? Yes, there is nothing to prevent them. For instance, when the oyster-beds at Newcastle and on the Clarence were leased they took enormous quantities of oysters out the first year. I was told that about 7,000 bags were taken out of the Clarence during the first year of the lease, and in the Newcastle river a very large quantity was also taken, although the river was supposed to be partially closed at the time. The same thing was done in the Manning River. More oysters were taken out of these rivers during the first year than in any subsequent year. I tried to get a return of the oysters taken out each year, but the lessees declined to give me the correct quantities.

FRIDAY, 1 DECEMBER, 1876.

Present:—

Hon. T. HOLT,

Hon. J. B. WILSON.

THE HON. THOMAS HOLT, M.L.C., IN THE CHAIR.

Mr. Jonathan Knight called in and examined:—

- Mr. J. Knight. 1713. *Chairman.*] How long have you been engaged in the oyster business, Mr. Knight? Eighteen years.
1714. In this Colony? Yes, on the river Hunter.
- 1 Dec., 1876. 1715. Solely on the Hunter, or have you been on any other rivers? Yes, I have been on the Parramatta River.
1716. Have you had any experience in England in the oyster business? I did not follow it as a business in England, but I have made my living by it in this country for eighteen years—in Newcastle. 1717.

1717. But in England you did not follow the business at all? No, my occupation in England was a different one altogether.
1718. What was your employment when you were engaged in the oyster trade? I used to catch the oysters and sell them to the dealers, on the river Morpeth and other places.
1719. Can you tell the Commission what was the state of the oysters beds when you first commenced business; were the oysters more plentiful then than they are at present? Yes, you might get any amount by dredging for them; in fact the banks were covered with them—some of the choicest oysters, too.
1720. The banks were covered? Yes, portions of the river Hunter that used to be dry at low tide. When the water went off you could pick them up—choice, good oysters.
1721. What was the nature of the soil on which you found them? It was a rocky soil.
1722. Is there any rich mud there? Yes, in certain localities.
1723. Did you not find the oysters thrive best where there was rich mud? Yes, but when there is too much of it it smothers them.
1724. I do not mean in excess, but sufficient to afford them food in the numerous insects which abound in it? Yes, that would be beneficial.
1725. They would not thrive so well on the bare rock as where there is mud? No.
1726. Is that your experience? Yes.
1727. And at the present time there are not nearly so many oysters as there were formerly? I cannot say what there are now. I have not been in the business lately.
1728. How long is it since you discontinued it? About four or five years.
1729. Was it in consequence of the scarcity of oysters that you left off? No; my wife wished to shift from Newcastle, and I came away, or else I should have gone on with it. I have been for eighteen years getting my living solely by oysters—that and fishing. I never followed any other pursuit.
1730. But up to the time you left, the oyster beds had fallen off very considerably? Yes. I don't know the cause, unless it was a succession of floods, and the debris brought down by the floods covered over some of the places where there were the most oysters.
1731. Don't you think over-dredging has had something to do with it? I don't think it has, sir.
1732. You gave evidence before a Select Committee of the Legislative Assembly some years ago, in 1867, I believe? Yes.
1733. Did you not say then that there had been a good deal of over-dredging? Oh, there was an abundance of oysters then; I never found the least scarcity.
1734. Had there been any falling off in the beds? There was in certain localities, where the debris from the floods had covered them over and destroyed them.
1735. Did you not tell the Committee that great quantities of oysters had been sent to Sydney to be burned for lime? Not to Sydney, sir; they were burned in the locality for lime, quantities of live oysters.
1736. In answer to a question put by Mr. Farnell—"What quantity of oysters do the Newcastle oyster catchers send to the Sydney market weekly?" you stated—"They have fallen off lately wonderfully. I have known 200 or 300 bags to be sent, two or three years ago; at the present time I should think not more than fifty or sixty bags weekly?" Yes.
1737. Then in reply to another question,—"Are there many persons in Newcastle now getting live oysters for lime-burning?" you stated—"A great many are engaged in getting shells. The children pick out some of the oysters, but I should think there are some hundreds of bushels of shells burned for lime weekly at Newcastle?" So they have; at least, they did at that time.
1738. Then you say, when you are asked whether some of the beds are becoming exhausted,—“They are. At Fullerton Cove, which produced some of the finest oysters on the Hunter, there is a foot deep of mud, in consequence of the oysters having been taken away. There is an area of at least 10 acres, which was once a mass of oysters, now destroyed in consequence of having been taken away to burn for lime?” Yes, that was the case.
1739. Then there had been a considerable falling off when you gave that evidence? Yes, there had.
1740. The oyster beds were not in the same state as when you first knew them? No, there was an abundance of oysters then.
1741. They had fallen off since that time? Yes; some of them were destroyed by the floods, and others had been collected in boat-loads and burned for lime.
1742. It appears to me that there is some discrepancy in your evidence. (*Evidence read from the commencement by the shorthand writer.*) Do you wish your evidence to stand? Yes, I think it is very correct.
1743. You gave evidence before the Select Committee in 1867 on the subject of leasing land for oyster culture, and on what could be done if each person knew what was his own portion? Yes.
1744. I was struck with one answer you gave,—“If I were now to lay down a lot of stones, or shells and oysters, in some isolated place, where there had never been an oyster before, when they became in a fit state for market, some other man would perhaps come and take them, and I could not help myself. I fancy it would be beneficial even if we had to pay a little, we should be able to produce a tenfold better article and ten times the quantity?” I am of the same opinion now.
1745. You are aware that the object of this Commission is to inquire into the best mode of cultivating and utilizing the oyster, and of maintaining and improving the natural beds, in order to recommend to the Government the necessary legislation to secure those objects. We wish to have your opinion on the subject. What would you suggest as the best policy to adopt, in order to achieve the results to which you refer in your evidence,—“to produce a tenfold better article, and ten times the quantity?” I will tell you what I should do if I had a bed myself, and what I think would be beneficial to the community at large.
1746. Well, first of all, what quantity of land would you require? I think an acre would be enough.
1747. What kind of land would you select for your purpose? The most rocky I could find.
1748. Would that be for breeding, or for growing and fattening. The two processes are quite distinct, are they not? Yes.
1749. Would your object be to breed oysters, or to grow and fatten them, or both? Both, in certain localities; I should shift them when they were large enough.
1750. But this acre of ground you would use for the purpose of breeding? For breeding and fattening altogether.

- Mr. J. Knight.** 1751. Tell us what process you would adopt, first in breeding, and then in growing and fattening the oysters? I should throw down a quantity of stones for the spat to adhere to, and as soon as they were sufficiently large I should remove them to a certain locality where they would grow and get larger.
- 1 Dec., 1876.** 1752. Now with respect to the parent oysters—Would you think it necessary to lay down any full-grown oysters to provide spat, or are there a sufficient number of parent oysters in the rivers to furnish spat? No, I don't think there are, sir.
1753. Have you any idea how you would place the stones you laid down. Would it be necessary to construct a wall—a low wall—with them? No; I would put down a number of rough stones so as to make a foundation, because spat will not adhere to a stone unless it is perfectly fixed. When the spat is ejected from the parent oyster it is something like a jelly, and it adheres to the first object it comes in contact with which is secure.
1754. Then you would secure the spat in this manner, and you would remove it from the stones and lay it down to grow and fatten? Yes.
1755. At what age would you remove the young oysters? I should think it would be fifteen or eighteen months before they could be removed.
1756. And you would knock them off the stones? Yes; I would take the stones that were most easy to remove without injuring the oysters.
1757. And what soil would you lay them down on? On the ground prepared for them.
1758. What kind of floor would you make? I would make the very firmest floor I could make.
1759. Do not oyster shells make a good floor? Yes, oyster shells make as good a floor as possible.
1760. You would lay them on the mud? Well, you see, if there is too much mud they get covered over; oysters want a permanent floor.
1761. And do you think that from 1 acre of land you would be able to produce a large quantity of young oysters and to grow and fatten them, if you were protected from oyster thieves? Yes; I believe that an acre properly cultivated would be quite enough. Better farm a little farm well than a large one and not half farm it; oysters require a great deal of attention.
1762. What rent do you think should be paid to the Government for an acre of ground? Well, I could not form an idea of that.
1763. But you gave evidence on that point before a Committee of the Legislative Assembly in 1867. You said that after the first three years a man would be able to pay £2 10s. to £3 an acre? Yes.
1764. Now do you think that from this acre of ground you would be able to make a good living after the first three years? Yes, I think so.
1765. And pay £2 10s. to £3 a year rent? Yes.
1766. Have you ever made any calculation or estimate of the quantity of fat marketable oysters you would be able to produce? No, I have not, sir.
1767. Then how have you arrived at the conclusion that you could make a good living out of an acre of ground? By practical experience and from localities I have visited where I have found abundance of oysters. I believe by cultivating them you could get them equally plentiful or more so than in their natural position.
1768. I do not doubt that you would be able to carry out all you say, but I should like the public to know the data on which you found your opinion. If I understand you rightly, you have arrived at this conclusion without calculating numbers, solely from what you have seen on an acre of natural oyster beds? Yes, that is what it is—from personal experience.
1769. And you are as confident in your own mind that you could make a comfortable living from one acre as if you had counted the oysters and sold them? Yes, I am certain of it.
1770. Are there any rocks where you have been employed? Yes; it is a kind of sandy debris, consisting of small portions of rock, and some portions of it are very fine and will cover up the oysters in their natural state.
1771. Yes, but what I want to know is—are there any rocks or mangroves for the oysters to attach themselves to? There are pieces of rock to which the oysters attach themselves, and the tide carries them down, so that they form natural oyster beds, which become as hard as solid rock in certain places.
1772. Do you think it would be necessary to set apart a portion of your land—supposing you would be at liberty to select it where you liked—for breeding, since there are such large quantities of spat sticking to the rocks and mangroves. Do you think you would be able to breed a better class of oysters from the stones you laid down? Yes, I believe that by cultivation they improve wonderfully, both in size and flavour and everything else.
1773. Have you not seen in other rivers and in Port Jackson that the rocky banks are literally plastered with young oysters? Yes, I have seen them adhering to the rocks.
1774. Well, if you were allowed to get these spat and transplant them to your own fattening ground with a bottom prepared as you described it, would not that economize your operations in oyster culture to a considerable extent? Well, I think there would be a difficulty in procuring these small oysters from the rocks without injuring them. A portion of the shell is apt to be split in taking them off; the least thing, even the point of a pin, will destroy them. They adhere so closely that it is a difficult job to get them off until they become adult.
1775. But don't you propose to take spat yourself from stones in your prepared bed? Yes.
1776. Would you not have the same difficulty in removing them from the stones as you would from the rocks? No, because the stones would be easily taken up and removed, and it would be more convenient to get the oysters off small pieces of stone laid down expressly for the purpose.
1777. But don't you think it would be easy to get the oysters from the rocks with a chisel and mallet? I should get them in the best way I could.
1778. Then supposing you got the young oysters off the rocks to which they adhere to an enormous extent, would not that be a great saving to you in your oyster culture? Oh yes, I should certainly get as many as I possibly could, and use my best endeavours to procure them without injury.
1779. Would not those oysters be equally as good as those which you could raise yourself. I mean would not the oysters taken from the rocks be as good as those taken from the stones—they would have to be removed in any case? They would be more liable to injury when they were removed from the rocks than from stones laid down expressly to receive them.
1780. Supposing they could be removed without injury; there would be no difference between them then?

then? I think there would be a great difference. I believe if they are attached to stones laid down expressly for them they have ten times the opportunity of catching the animalcula on which they feed. 1781. That is because they are in deeper water? Yes.

Mr. J. Knight.

1 Dec., 1876.

1782. But supposing the rocks to which they adhere in their natural state are in as deep water as the stones which you propose to lay down would be, would there be any difference in the oysters then? Well, I could not answer that question.

1783. It is very unimportant after all. What I wanted to ascertain was whether if these young oysters, which are found sticking to the rocks in such vast quantities, were carefully removed and placed in ground prepared in the way you have described, with a hard bottom, they would not become valuable food to an almost incalculable extent? Yes, I fancy they would, and increase wonderfully too.

1784. Then what do you think would be the result if the Government were to grant licenses to persons to knock these oysters off the rocks, and also to lease or sell suitable grounds for fattening—Do you think it would have the effect of giving employment to a large number of persons? Yes, I do; and I think it would improve the oyster trade wonderfully.

1785. It would have the effect—? Of increasing the oyster trade.

1786. And it would provide a large quantity of food? Yes.

1787. Do you consider oysters to be wholesome food? Yes, I believe there is a great deal of nutriment in them.

1788. Do you think oysters should be sold to the public until they are full-grown? No; I fancy they only become adult when they are four years old.

1789. You are aware that in England they are called by different names according to their age, in the same way as cattle are termed calves, heifers, or cows. Thus, young oysters up to the first year are termed spat, in the second year they are called brood, in the third year ware, and it is only when they are four years old that they become oysters? Yes.

1790. You think that none but full-grown oysters—that is oysters four years old—should be offered for sale? Yes.

1791. Then if a working man wished to make his dinner off oysters, and went to an oyster shop for that purpose, and was served with brood or ware—that is oysters two or three years old—he would be deceived, and would be unable to make a dinner off them? No, they would not be the same quality.

1792. But with respect to the quantity, a working man requires something to satisfy his appetite? They would not be so nutritive as oysters four years old.

1793. But as to quantity, he would not be able to make his dinner off these meagre, immature oysters—mere skin and water? No.

1794. While if he went to a shop and was supplied for his dinner with full-grown oysters, it would be an encouragement to him to go there again? Yes.

1795. Do you think it is an injury to the trade to allow these small oysters—which are not called oysters in England—to be sold in the shops? Yes, it is injurious to the trade, and also to the people.

1796. And you think that an immense business might be done in the oyster trade if it were properly regulated? I think so.

1797. From your knowledge of the oyster business, you think that the quantity of oysters that might be produced would be something wonderful? Yes, when you consider it, it is wonderful.

1798. Have you ever known oysters in this country in the winter-time to be killed by frost? No.

1799. Are you aware that that is frequently the case in England? Yes; the frosts here have not the same effect. I have found on the Hunter River that when you get a certain distance from the sea the oysters are much more numerous. I think it is because they are supplied with more fresh water, for when the water is too saline they never come to the same perfection.

1800. With respect to the oyster produce, do you think that oysters can be raised here as cheaply as in almost any other country—at a very cheap rate? I do not see why they should not.

1801. Well, supposing this system were carried out—that persons were allowed to knock the young oysters off the rocks; and supposing that the Government offered every facility to persons to obtain a couple of acres or more for oyster cultivation, on reasonable terms, have you formed any idea of the price at which oysters could be sold to the public? I believe they could be sold a great deal cheaper than they are now, in consequence of the increased quantity that might be easily produced.

1802. What is the price now? I think about 6d. a dozen. I think they are about a halfpenny each if you go to a shop.

1803. Are full-grown oysters sold at that price? Well, there are a good many defective ones sometimes.

1804. But are they two or three or five years old, or what? I believe they are.

1805. We have had some very small oysters exhibited here purchased at the shops, which could hardly be that age. Have you seen any in the shops in Sydney younger than four years old? No.

1806. You have not seen any young oysters in the shops in Sydney? No, I have not.

1807. At what rate, supposing the Government were to encourage the production of oysters to an unlimited extent on the plan you have sketched out, could they be sold to the labouring classes, who are of course the largest consumers of meat and produce? Well, if they could be grown as I have shown you, I should say they could be sold at 2s. 6d. or 3s. a bushel.

1808. How many oysters go to the bushel? I should say from eighteen to twenty dozen.

1809. Then you think they could be sold at a little more than a penny a dozen? No, I don't think they could be produced and sold at a penny a dozen. I should say two-pence.

1810. If they could be produced and sold at three-pence or four-pence a dozen, don't you think large quantities would be purchased, more than are purchased at present? Yes, numbers of persons could afford to purchase them then.

1811. Do you think they are as wholesome food as beef or mutton? Yes. I don't think there is the same stability in them as in beef and mutton.

1812. Do you think they are digestible food? Yes; I believe the medical profession consider them so.

1813. *Hon. J. B. Wilson.*] It was principally in the Hunter River that you gained your experience, was it not? Yes.

1814. Do you know any localities in the Hunter River where artificial beds could be formed—I mean localities which are under water at high tide and dry at low tide. Do you know any places in the Hunter suitable for that purpose? Yes, acres and acres.

1815. How much of that ground do you think one man could cultivate? I should say two or three acres.

1816.

- Mr. J. Knight. 1816. And you think two or three acres of such ground would afford profitable occupation to a man and his family? Yes, I do.
- 1 Dec., 1876. 1817. Have you had any experience in making these artificial beds? No, I have not.
1818. When you were sending oysters from Newcastle to Sydney, were you careful to pick out the small oysters before sending them off? Yes.
1819. You only sent the large ones to Sydney? No.
1820. What did you do with the others? Threw them back into the river.
1821. You were always careful to throw the small ones back into the river? Yes.
1822. Were not persons in the habit of collecting them for the lime-burners? Yes, a great many were destroyed in that way.
1823. How do you account for the fact that the oyster beds on the Hunter River were so much more prolific when you first knew them, seeing that there were probably as many floods in those days as there have been in subsequent years? Because they used to collect them in large quantities and burn them for lime.
1824. But that is what I call over-dredging. I do not allude to their being taken only for food, but for all purposes. Then you agree with me that over-dredging, that is taking them from the beds in large quantities, must have had a great effect in destroying them? I think it was the principal cause.
1825. You have not been connected with the Hunter at all since it was proclaimed a close river by the Government? No.
1826. Are you now living in the neighbourhood of any bays or inlets to the sea? No, I am not.
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OYSTER CULTURE COMMISSION.

APPENDIX.

MEMORANDUM suggesting details of information which the Inspectors of Oyster Fisheries, to be appointed by the Commission, should be required to furnish.

1. What was the state formerly of the natural oyster beds of the rivers, &c., you inspected, as far as you are able to ascertain the facts?

2. Have the oyster beds been injured by over-dredging, or any other cause? If so, state to what extent.

3. Describe the present natural state of the rivers, &c.

(a) Are their banks and beds of rock, soil, or sand? Or if various, state how much there is of each.

(b) If the beds and banks are of rock, are they covered, or partially so, with spat or oysters?

(c) Are any of the beds of mud? If so, what portion of them is of that kind of mud similar to the London clay, so suitable for fattening oysters?

4. Are there any salt-water marshes near the rivers you have inspected? If so, are they more or less covered by the tidal waters, and to what extent? Do the swamps consist chiefly of sand, alluvial, or a rich clay mud? Do the swamps belong to the Government or to private parties? State also, as nearly as possible, their situation.

5. State what you consider to be the quality, sizes, and ages of the oysters; also the proximate extent of the beds.

6. The quantity of shells or other suitable material on the banks of the rivers which can be used as cultch.

7. State what you may have been able to learn from reliable sources about the spatting of oysters in the rivers, &c., you have inspected. It is very desirable to ascertain, if possible, whether there is any proof (as some persons assert) that the spatting of oysters is going on all the year round.

8. If it is considered that the spatting of oysters is confined to certain months, which are those months?

The above queries relate to matters of fact, and the Commission now require you will give your well-considered opinion on the following topics.

9. Do you consider it is for the interest of the public that the rivers, &c., should be leased, in very large areas, as at present, or in small and moderately sized areas.

10. Do you think it expedient that the Government should refuse to lease those rivers, &c., whose banks and beds are natural breeding beds but not fattening grounds?

11. Do you think it would be a wise policy on the part of the Government not to lease these natural oyster beds, but to allow licensed oyster-men to remove the spat and oysterlings therefrom, and sell them to those persons who have what are termed in England *laying beds*.

12. What improvements, if any, have been made in the leased natural oyster beds by the lessees? Also their nature and extent?

13. The Commission will be glad to receive from you any further information or matured opinions other than are suggested by the above queries.

MEMORANDUM—

For the purpose of report by the Inspectors, the Commission will understand a natural oyster bed to mean a portion of submarine land so covered with oysters as to make it payable commercially to work.

NOTE.—The numbered paragraphs in this and the following reports are the replies to the several questions set out in the foregoing memorandum.

RICHMOND RIVER FISHERY.

1. When first known abundant, and fine quality on all beds. See tracing, and some others since covered by river deposit.
2. Chiefly over-dredging; minor degree by river deposit.
- 3.—
 - (a) Hard, sandy mud, often intermixed with finely broken shell; on slope of banks; sometimes soft mud.
 - (b) Rock only around North Head.
 - (c) Specimen sent seems similar to best fattening grounds of Europe and America.
4. See tracing. Composed chiefly of *marked* specimen, although patches of soil unalloyed by sand and shell occur.
5. Quality good. None full size, as shown by shell found around dredgers' old camps. Age, 1, 2, and 3 years. Few spat on beds, but abundant over low-water-mark on large shell mounds, at short intervals on both sides of North Creek.
6. See tracings.
7. End September and October, prime fat end November. Fall off when rainy season begins—generally mid-March, but varies if light or escape rain. Oyster continues good till beginning September.
8. Spat of a size to notice generally about end October and November.
9. The fine fattening oyster-ground of Richmond certainly in moderately sized areas.
10. Better able to answer after inspection of more rivers.
11. So far as I have yet observed, yes; under judicious restriction rigorously enforced.
12. No lessees, and river closed.

Arrived hither 7 p.m., 18th instant. Received every assistance from Mr. Henry Bassmann, resident police constable; also every information from Mr. Ross, J.P., Mr. Moahs, Mr. Heough, Mr. Sparks, J.P., residents of twenty years and over; likewise from several aborigines. John Sinclair, Government signal-man, formerly many years dredger in Hunter, states:—Was sent hither, together with nine other dredgers, 1864, by Sydney dealers; found payable bed only in North Creek (those marked on tracing), and two fine beds, since covered by river deposit; dredged about 1,000 bags, most of which spoiled by vessels being bar-bound; so, after four months—three weeks of which only were spent in dredging—the speculation was abandoned. This party estimated that beds bore about 3,000 bags marketable oysters. The following year an unusual succession of floods destroyed many of the oysters by means of deposit, and covered the two now extinct beds. However, next season spat was very abundant, and settled not only on all congenial spots on banks of said creek and main river, and likewise on every heap of discharged stone ballast (but in both cases above low-water-mark, as at present), but also settled abundantly on the parent bed, which latter is not the case this year. Since then several parties similarly sent—that is, to dredge and forward the result at a given sum, probably 2s. to 3s. a bag—have not given beds time to recover. This system, it will be perceived, is calculated to prove very injurious to the beds, because it is the object of dredgers to swell the bag with young and old alike, the only check being the interest of employer; but that interest, save in the case of most but not all shipments to Melbourne, is nearly as well served by immature as mature oysters; for excepting one or two Sydney retail vendors, the trade make as much or more profit getting the bag of oysters aged one to two years at 2s. or 3s. less than mature oysters; provided there be in it only oysters sufficiently grown to supply the limited plate-trade they can command, the younger oyster pays better than the mature to bottle, especially at 3s. a bag less, and, at such reduction, on the average it yields a very handsome profit to the dredger's employer. A system of restriction to size and rigorous inspection seems to be the only remedy.

Floods which rise 25 feet and over at Lismore, spread before reaching Wardall, or 1st sec. of this map, and thence to mouth average in all ordinary cases from 2 to 3 feet higher than ordinary spring tides, and in the highest flood—1871, 5 March—known in the district during the occurrence of an unusually heavy easterly gale, the greatest height attained at Ballina was only 4½ feet, but without current either in Main River or North Creek. Hence, from the greater buoyancy of fresh water, it is probable oysters will suffer little, if any, from its effects, though much from extra muddiness of water, producing what is called sickness, and not, as on cultivated beds, being regularly freed by rake from accumulating deposit. Of course your honorable Commission will be perfectly competent to distinguish between the sickness thus produced and that produced by spawning operations, but which I have observed the trade persistently, as a rule, no matter when it occurs, allege to be caused by spawning alone, probably as a basis to resist the enactment of a close season.

However that be, on the two upper beds there is at present only a single layer of oyster, and probably 500 bags, but not sufficiently deep, especially as the clutch is composed chiefly of finely broken oyster-shell, and therefore neither live oyster nor clutch is capable of fixing the spawn as discharged. Hence the probable cause why few spat appear on the beds, while the banks of the creek and every stone of the ballast heaps between high and low water mark, in main river and entrances of creeks from Pilot Station to Wardall, are literally covered with, say, oysters aged one year and spat six weeks. I found, as per tracing, clumps of oysters here and there in bed of main river, together with mussel and cockle spat, but no mature mussel nor are residents acquainted with them, though they must somewhere exist in the river.

Finally, I am convinced the whole of the river to Wardall, and the North Creek as well, as far as tracing shows, are well suited for oyster-culture, especially with such an abundant supply of the finest clutch so convenient to any portion of said water, and from the fact that scarcely a flood occurs whose deposit may not easily be cleared off the beds by means of the ordinary oyster-rake, while nothing could be better adapted for the formation of trenches than the marshes, as marked in tracing. It may not be deemed amiss if I remark that the word is not commonly spelled *clutch* nor so pronounced, but *clutch*, the original idea being to clutch or seize the spawn as ejected. We have had rough weather here, which has slightly impeded my operations. However, I have now finished. I proceed to Clarence Heads to-morrow, but it is somewhat difficult to procure horses.

I forwarded to Mr. Vesey, agent, King-st., a small box containing specimens of soil, which may be both interesting and instructive.

I have, &c.,

A. B. BLACK.

Ballina, 25 November, 1876.

CLARENCE RIVER FISHERY.

1. I fully endorse Mr. Fraiser's statement, as seen by myself both here and in America, on every bed in its natural state I have examined—that is, close set clumps of five or six oysters each, and two to four clumps thick all over the bed, averaging about eighteen mature oysters besides spat on every 5 square inches, over an unbroken bed of shell on a tolerably hard bottom, similar to specimen No. 2. Further, this is the condition of bed most suitable for retaining spat.

2. By over-dredging, slightly affected by flood deposit—which, however, is entirely preventable during floods by using the common English oyster-rake—last-quarter ebb and first-quarter flood. But this implies proper culture and one or two men employed per acre, which, however, the result would fully justify at even a less price than that at present obtained. Second query. To a very serious extent. The operation of the heavy bow-dredge used and manner of use, viz.:—Fixing a pole in bed and dropping boat thence with tide 30 or 40 fathoms, the length of a line fast to a windlass in boat's bow; then when dredge is cast, leaving up to said stake will obviously—especially when the oyster is scarce on the bed—have the effect of deeply furrowing the natural bed or clutch, and drag together oyster and clutch in its way into the boat, wound up to the stake, leaving at least large patches of the under stratum of soil bare, therefore quite unfit to bear oysters, much less spat, until again covered over by shell. While around the stake the refuse cullings of clutch are accumulated in heaps; the boat is sheered across tide when dropping from stake, in order to vary the furrow and widen the scope. Manifestly then, each successive dredging lessens the reproductive power

power of the bed. This is the actual condition of the beds as revealed by the tongs, which is the only implement by which it can effectually and readily be done. The dredge for this purpose is utterly useless, and in muddy water the water-telescope is little better, while diving is out of the question.

3.—

- (a) Banks of the whole of the lower estuary, creek, and lake are composed of a compact, unctuous, blackish soil—alluvium and decomposed vegetable matter—seemingly by aqueous agency hardened into rock, on a portion of eastern side of lake, and about the South Head, but not all of a uniform state of hardness, and coloured according as the white sea-sand more or less predominates.
- (b) The beds both under clutch and free of either oyster or clutch are invariably composed of said soil and sand (Specimen 2), save the wave-drift sands at river's entrance, which are said to shift every tide. But further up river, only in floods, and not always then, do the beds of the more compact mixture shift, but every freshet adds to them, while both in oyster creek and lake no perceptible difference has been noticed during the last fifteen years by either residents or aborigines.
- (c) Only observed in patches in deep water, in the narrow channels running between the more solid oyster-beds and oyster-grounds, which latter, in many places a-wash at half-tide, are largely intermixed with broken shell over the wide extent of the lake, and all this ground possesses apparently the highest fattening properties.

4. Salt-marshes are numerous; indeed all the land on the creek portion of Yumba Government reserve, that on opposite side, and about two-thirds of that surrounding the lake, may be termed such, as none of it is more than a few inches above ordinary tides, and most of it covered at high springs, while several depressions admit every tide over considerable areas; in fact, partially over hundreds of acres, especially at lake-end of creek, with not a tree or bush on it, but densely covered with common marsh grass, and the depressions with rank aquatic vegetation; all which is admirably suited for culture by means of trenches, including Freeburn Island, lower portion of Goodwood, and all the islands in the north lower arm, as marked in tracing, all being unselected.

5. Very few are mature; all, or nearly all, aged two years and under. The quality is good. Size of bed marked in tracing.

6. The quantity formerly abundant on both sides of creek, said to have been 8 or more feet high, and 20 to 30 wide; are rapidly diminishing, under the pressure of high prices obtained. The few beds on reserve, lying back from convenient reach, will soon be attacked if a prohibition, strictly enforced, be not at once issued, for nothing else can save such an essential element in the future development of the fishery, and nothing can replace it.

7. There are neither spat on oyster, nor oysterless clutch beds in creek, main river, north arm, nor lake, and comparatively few of year-old oyster, though abundance of two-year old; hence I conjecture that last year was a poor crop, and spawning has not yet taken place; but, as Mr. Fraiser says, the oyster begins to show signs of its approach. From what I observed on sea-dyke, and signs I could not account for in the Richmond, my belief in the uniformity of species and similarity of habits of rock or tidal-oyster and drift or under-water oyster, whatever it may be in other countries, is somewhat shaken in at least these two rivers, and perhaps Fraiser is correct; at any rate I shall require to see more, and examine their respective habits more fully, before I am disposed either to affirm or contradict; but I must say that his view of the case would completely account for whatever apparent anomaly exists in the spawning of oysters. However, a good microscope is necessary, and a patient investigation of their respective habits continued for at least a season or two, in order to satisfactorily settle the point.

8. Holding the above view, I agree with Mr. Fraiser as to a close season, and the time he specified, for although very curious anomalies, judged by quadruped breeding, occur in pisciculture, yet shore-oysters, breeding all the year round, can afford no good objection to the real oyster beds being closed sufficiently long to protect them during their legitimate spawning and spat maturing season.

Referring to Memorandum.—Every one of the beds and patches, both in Richmond and Clarence, are in every sense of the word commercially payable, at a relatively proportionate rent, however bare the oyster on them, and with the experience mentioned by Fraiser, corroborated by reliable evidence of other residents respecting the amazing recuperative power and productiveness of the lake-bed and its ramifications, the oysterless shell beds, barring the crop, is of equal commercial value to any oyster-bed, as that case fully proves; it is only when the bed is destroyed that such is comparatively valueless.

I arrived at the Clarence Heads from Richmond 3rd December evening; experienced much difficulty in conveying my implements through the bush.

I obtained much useful information from Mr. Black, fourteen years resident at Yamba, a freeholder of land and lessee of a run abutting on creek and lake, constantly visiting these parts, therefore in a position to observe what was transpiring during that period; also from other intelligent residents and aborigines. He, in common with others all more or less interested in the good management of the fishery, expressed dissatisfaction that the mode of leasing precluded the residents of the district from acquiring leases, and that the district derives no benefit whatever such as should naturally flow from so productive a fishery.

And in respect of engaging in the culture thereof if the opportunity were now afforded, it seems to me that having witnessed closely matters connected therewith under five years' occupation by an energetic lessee, thereby having their former somewhat hazy notions of the commercial value thereof corrected, not one of those to whom I spoke on the subject but expressed a strong desire to lease either oyster-grounds or marsh of moderate extent for the purpose of culture,—especially under fifty or sixty years tenure and reasonably encouraging conditions as to rent and restrictions; and all of them added that a close-season for the protection of breeding would be indispensable.

In conclusion, I may venture to point out that, although nothing could be more courteous and kind than the bearing of all the people at the beds, as well as that of every resident I met, nor could information be more cordially given nor opinions more freely expressed, as soon as my mission was made known; nevertheless I was really at a disadvantage, and extra labour enforced and time lost, by not being in a position to convene by some sort of authorized means the residents in numbers, in order that the object of the mission and the useful results which the Commissioners have in view might to all at once be more clearly and perfectly explained than was possible to each individually.

If I apprehend aright the nature or spirit of my instructions, written and verbal, they strongly impose the duty of accurately ascertaining whatever information residents of any particular fishery district may possess relative to the beds, together with an expression of opinion as to mode of management, under a leasing system, most suitable to that district, the culture of its beds, and general development of the fishery. If so, then I humbly submit the surest means to obtain such would be to invite by public notice a few leading residents to convene on a given day those interested in the matter or capable of giving information. Then answers and opinions openly expressed would give more general satisfaction, and any report of mine thus backed would inspire more confidence and be in every respect more useful, and above all, such course would remove individual distrust,—a not unusual feature in country life,—and tend to secure greater interest in the subject.

I have, &c.,

A. B. BLACK.

BELLENGER RIVER FISHERY.

1. In 1868 first dredged by two men in partnership—of whom one James Pettit, now in Pilot Service here, I got this information, and is an intelligent man. *His evidence enclosed separately.* These men found four beds: 1st. At Ferry mouth, off south arm. 2nd. Three miles up south arm. 3rd. Creek running through island in main branch. 4th. Lower end Bruchell's Island, thence ridge running down left side of river. Said Pettit says—1st bed. Oysters in clumps, singly and somewhat apart could be picked up at low water, hence was well skinned. 2nd bed. From 8 to 16 feet low water, running in a ridge about 30 feet wide, bulging to 50 or 60 feet here and there, and about 1 mile in length, running irregularly from side to side of the south arm—a creek about 2½ chains wide. This bed was densely packed in clumps of five or six oysters each, and five or six clumps deep. Had to weight the bow dredge heavily in order to make an impression. Got in all, he thinks, about 1,500 bags, much of which was spoiled, as often vessels were weeks bar-bound; therefore made relatively little; skinned the bed however. 3rd. bed. Dry—save narrow channel at half-ebb. In single clumps in said channel, clumps eight to twelve attached, but a single layer only, i.e., not superimposed as in 2nd bed. This, on account of shallow water was as well skinned as bed No. 1, produced about 500 bags. 4th bed. Water 8 to 18 feet low water, and in a strong tideway, oysters mostly single on large pebbles, and therefore

therefore slightly dredged, but is a favorite resort for the rather numerous blacks of the district, who dive, man, woman, and child, and procure by this means large quantities. This is, in form oblong, extending from left bank two-thirds over to Burchell Islet, extending down $\frac{1}{2}$ of a mile in a ridge varying from 15 to 40 feet detached at intervals.

2. Omitted.

3.—

- (a) Left bank of river from bar to opposite lower end of Burchell Islet, sand and small admixture of soil, thence upwards alluvium deep and stratified resting on sand apparently deep. Islands alluvium-black unctuous soil, but lighter in colour than that of either Clarence or Richmond. Right bank upper end of Burchell Islet, similar soil running up to a spur of friable rock (similar to that in south arm) which occurs in island channel just above entrance to creek running through it, thence to entrance to south arm a redish clay mixed in black soil. This latter is also the character of south arm; right bank above marsh contained in Government reserve. Island in south arm alluvium and chiefly marsh—a spur left bank just above ferry, also similar to above described spur, of which more anon. From Pilot Station to outer head right bank—high ground at “Station” descending abruptly to a rather broad bottom rising again to form the heads; through this bottom runs a creek about 25 feet wide, 2 to 3 feet deep, and 3 to 4 miles long, terminating abruptly; bottom shingly and clean. This creek is also lower part of bottom together with a large bed of sandy mud in front of it (dry at half ebb) superior oyster ground—very easy to cultivate.
- (b) Slightly covered wherever rocks occur, so also ballast discharged off vessels, and on detached clutch especially around Ferry Point and margin of first bed.
- (c) Seldom mud alone—but sandy black mud—proportion two parts mud, one part sand; excellent bottom.
4. Island in main river; also large island in south arm; marsh commencing at a spur of friable rock right bank of south arm, running round (to 200 and 300 yards) back along said bank; part entrance; point of arm, to rising ground at Pilot Station; also peninsula formed in south arm.

If the 60 feet of neck of said peninsula were cut through it is highly probable that instead of that creek being the cause of forming the sand-bed by its $2\frac{1}{2}$ knots current impinging obliquely on the 3 knots downward current of main creek, producing thereby a wide eddy of many acres extent—if said isthmus were cut through, the direct current of said island creek would most probably sweep off such accumulated wave drift sand bed (expense of such cutting—60 feet by 6 x 4—through alluvial soil at base of bluff friable rock; would cost little) and leave 20 to 30 acres of most superior oyster ground; bed of shingle and shale clutch clean, and only 2 or 3 feet depth at low water. I consider it my duty to notice this here, because I find a man named Wood has within the last week or two free selected this peninsula and a portion of said bluff, which cannot possibly be of any immediate advantage to him. I mean the peninsula on account of its submergence in spring tides; therefore, for both reasons ought, that is, in the interests of the fishery especially, probably for his own interest also, be refused. To resume: all the islands and marshes specified are superior ground for trench culture as well as a marsh, upper end of Government reserve, opposite Burchell Islet, between Tucker's special two years ship-building lease and free selection, next to said reserve. Then Ferry Point, also the spit of high sand banks covered with grass, running down to bar on left bank of main river would form excellent sites for fishery townships; and fish (as well as oysters) abound in the river.

The marshes indicated, as far as ascertainable, seem to be reserves or unalienated, excepting the peninsula particularised which, would, as mentioned, do harm to no one, if Government included it, and bluff as well, in the ferry reserve, adding probably 100 acres thereto.

5. Ferry bed or No. 1—good quality, age one year. No. 2 bed—middling, age one to three years. No. 3—good, age one to three years. No. 4—good, age one to three years. Since the time described specified in first answer, some hundreds of acres excellent oyster, growing both under and above low-water-mark.

6. Plenty of shell scattered through soil of whole Ferry Point, including bluff and peninsula (suggested as useful to reserve) and also throughout all the islands—reserve on left bank main river.

Pilot station reserve up right bank of south arm, near to upper end of island therein; also on land some distance up from ferry on public road, but nowhere in banks; shingle and gravel is however abundant in bed of river, and creeks; also some parts of pilot reserves and the aforesaid bluff.

7. Oysters are positively getting into condition to spawn and according to Pettit do so this month and first part of next, but no evidence whatever of spawning being carried on at any other time of the year.

8. End December, January, and early in February.

9. In moderately sized areas.

10. Answer in subsequent report.

11. To license resident lessees as an encouragement to take leases for culture; and also perhaps it may prove advantageous to license a limited number of persons to gather and sell spat to culturists at each fishery, but only for a period of the year suitable for the purpose, and also under strict restrictions and supervision.

12. Not leased.

Omitted to answer second query at proper place; hence now answer as follows:—No doubt beds 1, 2, and 3 were injured by over-dredging at first, and latter dredgers and blacks together have, assisted by flood deposit, prevented the recovery of the beds, and moving mass of sand in south arm must, in shifting greatly injure No. 1 bed. It is also too convenient for the blacks, who not infrequently sell them for grog, which practice in the interest of humanity ought to be stopped.

13. I would respectfully suggest, as a means to stop irregularities of any description in any fishery district, that a resident should be employed at a moderate pay as a supplement to his industrial income, to act as a bailiff and as a medium of information betwixt landlord and tenant.

James Pettit's evidence.—About ten years engaged in dredging, now in Pilot Service. Dredged in all these northern rivers, including Tweed, which, as I have heard from other sources, he declares to be the finest oyster fishery of all. Lost many bags by bar-bound vessels. Complains, as Fraiser, of Clarence, of untrustworthiness of Sydney agents; also of the action of Government in leasing to the detriment of dredgers, and thereby fostering an obnoxious monopoly. Is of opinion that oysters do not spawn in any northern river all the year round, but betwixt beginning of November and middle February. Is anxious, as many in same district, that oyster culture should be permitted under long leases, and moderate rental, no matter however stringent necessary restrictions be. Strongly in favour of close season; indeed his evidence agrees with and strengthens Mr. George Fraiser's report.

I have, &c.,

A. B. BLACK.

NAMBUORA RIVER FISHERY.

1. These beds have not been much worked, in consequence of the difficulty of transit to market; first worked about ten years ago by three or four men only, however, for a short time, and probably not more than a few hundred bags were then sent off, and probably half as many more spoiled through bar-bound vessels. Much of that sent was conveyed up Wattle Creek (a tributary running from inside of bar to within a few miles of the Muelcay Heads), thence across for shipment at Muelcay Heads. Two or three parties at different times subsequently have tried dredging, but with discouraging results for a similar reason. Hence it is presumable that excepting destructive effects of several floods, beds are pretty much in the original natural state. However, whatever the cause, there is ample evidence to show that at no late date, say thirty years ago, the existing beds were much better stocked than at any time since, and the stock of several existing clutch-beds must within that time have been exterminated. Last-named beds are clean, and quite ready to receive stock, which there is every reason to believe would thrive, as those which exist are in excellent condition; and rocks at head are covered with thriving tidal oysters.

2. Therefore beds are not injured by over-dredging, but by other causes. Clutch on existing oyster-beds is not furrowed, but portions are overlaid by a foot or two of soft deposit, and perhaps the clutch-beds referred to may thus have been overlaid at one time, while at another they were cleansed. The mischief cannot be entirely attributable to vermin, though rather numerous. What effect has been produced by denuding banks as well as land back of protecting timber? Long strips on either bank upward are thus exposed to the full force of the flooded river, and large sections thereof are by each flood washed away 8 or 10 feet deep, forming land in other parts, and banks or islets in river, which are obviously in a state of either increasing or decreasing movement during each flood. The soil is neither so unctuous nor tenacious as that of the Clarence.

3.—

- (a) From North Head up 3 miles, land high, and banks friable rock, when a short marshy creek, excellent oyster and trench ground fills in a space about 250 yards by 500 back betwixt this and next range, which extends a mile or two

two further to level soil bank and free selections; right bank wave-drift sand mostly for 3 miles up; heavy shifting sand-banks up from bar same distance, and running on to east point of island, leaving only a narrow channel along right bank, and a narrower and shallower along left bank into a creek which forms said island. This creek nearly all its length is excellent oyster ground, and two-thirds up it a few excellent oysters, many of them single on shingle and shell clutch, and generally clean bottom. Main river from abreast of upper part of island the bottom is mostly good; sandy mud and broken shell, and a continuous rather narrow strip of soft mud sometimes overlying shell-clutch, and in spots shingle; much of it quartz shingle; a little below Mason's selection, on left bank shingly quartz and shells over the sandy mud in improved condition commences, and runs across to John Ainsworth's wharf, where a very fine rather large deep shelled very fine oyster begins to appear on a good bed of shell-clutch, extending nearly across the river, deepening from a nearly level bed of 10 feet water to $3\frac{1}{2}$ and 4 fathoms, fully $\frac{1}{2}$ channel over for better than $\frac{1}{2}$ a mile up to Gummo Gummo bluff, along which bed said quality of oyster singly and in clumps of 3 or 4 in single layer, is tolerably abundant, but beyond said point said clutch-bed runs into soft mud, and round the bluff a deep bay extends for a hundred or more acres of sandy mud and broken shell, a portion dry at $\frac{1}{2}$ ebb, and remainder 1 to 4 ft. low water. Admirable oyster-ground, round the inner margin of which and on isolated stones and pebbles on the bed are the finest tidal oysters I have ever seen—of course indication of the excellent quality of the ground for culture. But I think above this ground the water deteriorates in quality; however the bed becomes shingly, mostly without shell, and from said ground up to Taylor's arm there are two similar bends with from 1 to 4 feet depth of water at low-water, with tidal oysters round two intervening bluffs, also similarly on stones on ground. The main river about 300 yards by 100 in main river, and 200 to 300 yards into Taylor's arm there is a bed fairly stocked, and apparently for the past two years improving. This must not long ago have been a very extensive bed, and it would be both highly instructive and useful to know the cause or causes which produced the evidently sudden extermination of stock.

(b.) No spat, and not many last year's oysters.

(c.) Beds of sandy black mud, and also black unctuous mud in parts, but of lighter hue than that of Clarence.

4. One already mentioned left bank 3 miles from heads, and one below adjoining Ainsworth's farm, with a short creek in it. The left bank of Wattle Creek for 2 or 3 miles and some distance back, right bank of Wattle Creek is a narrow sandy spit dividing it from the sea. There are here and there a few tidal oysters in this creek, but a large extent of its bottom as well as the marshes is excellent oyster-ground. Fish-abundant in creek and river.

5. Quality good. Age from one to six or seven years.

6. There seem to be no banks of shell, yet shells are scattered abundantly all over the land on ridges as well, but plenty of shingles next in quality to shell for forming clutch.

7. Spawning is about to commence soon, as many are now in an advanced milky state; but no evidence to show spawning at any other time. On neither oyster nor clutch are any appearance of oysters less than a year old.

8. Therefore end of December and January may be the time.

9, 10, 11, are answered in other reports.

12. Not leased.

13. Residents appear to be anxious for the introduction of culture; also to engage therein, but object to non-resident lessees; also express a desire that Government should provide sound and detailed information on culture, and all express great interest in the matter—women as well as men.

MEMO.:—As before remarked, I believe all the clean clutch-beds referred to are even without the oyster of high commercial value, and for obvious reasons ought not to be estimated at a value much less than the stocked natural beds.

All residents are exceedingly courteous and ready to afford every information they possess, but I experience difficulty in getting boats and means for travel.

I have, &c.,

A. B. BLACK.

MACLEAY RIVER FISHERY.

1. I have spoken to several residents ten to twenty-five years in the district, all of whom know or have heard of the existence of only two beds; one in Spencer's Creek as marked had disappeared over twenty years ago—the other in main river close to steam-boat store seems not to have thriven for the last twelve or fourteen years, and was practically destroyed during the flood of 1874; yet I find a few scattered clumps of a good quality over the bed and about the roots of mangroves. So also mangrove oysters are general here and there up to point above which the surface-water becomes too fresh to permit its existing. The creek whence artificial cutting is made to carry flood-water off by south-west rocks contains few oysters; but round creek end of cutting they are getting rather numerous, no doubt propagating from oysters in the short creek open to the sea, into which the cutting runs, close round said rocks, and may eventually, judging from present appearance, afford a good channel for trading craft.

2. No dredgers have had ought to operate on in this river, and I cannot conceive any feasible reason to account for the practical extinction of oysters where at no distant period they must have abounded. Freshness of water will not account for it, nor deposit, whether sea sand or alluvial, although the latter may in part. Perhaps an epidemical disease may have had something to do with it. But whatever the agency, I am, from various appearances of the present condition of the remaining clutch-beds, strongly of opinion that a similar agency was in operation about the same time to produce extermination of oyster on the now bare clutch-beds of all these rivers which I have examined; also that whatever the cause its strength is already spent, and all these bare clutch-beds in every one of those rivers are in process of recovery, if not, indeed, entirely recovered from the supposed causes of extermination, as for example the bare clutch-bed section tenth of Oyster Creek, Clarence—or the lake-bed of report on that river, which by some happy accident was stocked, at proper time for lessee, by spawn from the fairly stocked creek. But none of such clutch-beds in the other rivers being so favourably situated for such a freak of nature, as in that case the process of stocking by natural means may therefore be expected to take a much longer time; however, by artificial means, the thing may be done at once, and with as little risk as that of stocking a first rate station with sheep.

3.—

(a) Left bank, rocky at head; changing in the downward course of the river to a muddy sand, 8 or 10 feet above high-water; then to a grayish-black tenacious soil, not so black as that of the Clarence; then to a muddy or rather sandy nature with one-third of blackish soil and unbroken oyster-shell—many dry shell beds occur above the said grayish-black soil, as well as in all the islands, and this too forms the substratum of river bed mostly, also the right bank on spit terminating right bank.

(b) At south-west, rocks only—already noticed.

(c) Chiefly of sandy mud—subsoil generally as in other rivers reported on, the unctuous soil in this case of lighter hue. *Fattening of oyster* is unquestionably due to the *living* infusorial animalcules (in shape to the eye a slimy mud, but aided by the microscope a living mass of minute animals—a fact first disclosed by Ehrenberg) brought in by each recurring flood-tide to be deposited on bottom suitable for its retention. And so far into estuaries (even under a stratum of fresh-water) as this mud is conveyed by the tide and no further, but only on the kind of bottom indicated have we reason to expect the oyster to thrive. Therefore, I respectfully submit, that the oyster-fattening properties of either water or soil is in no respect due to long defunct infusoria such as that which may form a component of London clay, but to living tidal-infusoria. However, that clay may form a good subsoil for clutch-beds, and prove attractive as well to tidal-infusoria, but nowhere in the Thames does it come in such immediate contact with oyster-beds as to definitely justify such opinion only by deduction.

4. I note the existence of salt-water marshes, and better ground for trench culture could not be. The unctuous tenacious soil of the district belong all, I believe, to Government.

5. What few there are, are from 1 to 3 years, quality good, extent nothing.

6. Dry shell banks exist, and an unusually extensive bed about 10 or 12 miles up Clyburn Creek. About 12 or more feet deep above water, and several acres in area. Whence Kempsey obtains lime. It is situated on western portion of Government reserve, adjoining Plummer's selection. Oyster and cockle shells mixed, but no oyster could now exist miles below this spot.

7. Spawning operations are going on now, and no indication of spawning having occurred within the last year.

8. I should judge in December and January.

9. Moderately sized, long leases.

10, 11, 12. Answered in other reports.

13. Residents take much interest in the matter, and express a strong desire to engage in the pursuit if encouragement in shape of long leases and moderate rent is offered.

I have retained these reports till now, expecting to have received plans of Bellenger and Nambuccra, at Port Macquarie, but not having come, therefore, I forward them without.

I have, &c.,

A. B. BLACK.

PORT MACQUARIE FISHERY.

1. It seems that before limestone was discovered at Piper Creek well up the Maria River oysters as well as shell from the immediate beds was largely used, and even afterwards to the time of leasing, as much less wood was required in the process. Hence the beds were much injured, as forty or fifty years residents, who themselves were so employed, inform me that all the shallow beds, viz., those from the dam bed contiguous to town up to first point; that in the bend opposite to said point, also from the entrance to Limeburner's Creek, for about two miles up, most of these could be picked up by hand in 2 or 3 feet at dead low-water. Therefore the main beds now in first reach of river, being in 5 to 7 fathoms, escaped. However, these old people think that those beds were every few years smothered in silt, then recovered to undergo a similar process of skinning. These shallow beds were complete unbroken masses of oysters many tiers thick, and broke out in clumps of some dozens—to use their expression—as big as a bucket. Then on the decay of Port Macquarie oysters were undisturbed and grew apace on many but not on all the spots on which they formerly grew. This continued till /69, when one or two dredgers came by chance; their luck drew many others, so that towards the end of that year fourteen boats of two men were engaged on them, and for the two following years seldom less than ten to twelve boats were employed, averaging ten bags a day each, and on the shallow beds at first as much as twenty to twenty-five bags were got by one boat and two men. But in /73 most of the boats left, as the catch had gradually dwindled down to three and four, with harder work and a longer day. However, it is very evident the beds got such a thorough skinning that they have not yet recovered, and in some instances never will by natural means, i.e., in any reasonable time. This oyster has a tendency to grow in larger clumps (ten to even twenty) than in most other fisheries. Andrew Barber's statement clearly describes the quantity hitherto found to exist on a bed in its original and natural state. And here I reiterate that in both America and New South Wales I have always observed the bed in its natural state to form in clusters, layer over layer; as in some of the bays in the delta of Mississippi, where it rises to obstruct navigation to a height from 6 to 8 feet of water to the top as in the case of coral, but I have invariably noticed that the living oyster is not found below the eighth layer—probably in that condition the eighth year is the term of its natural life.

2. From what I have written, it is evident the beds have been seriously injured by over-working, also, as before observed, the bow-dredge plays unmerciful havoc on the clutch as the bed becomes bare, although to break into so compact a mass a bow-dredge heavily weighted may be necessary at first—but I have reason to suppose not after the mass has been thus thoroughly shaken, when a straight-edged dredge alone should be tolerated—and, of course, weighted according to depth of water and strength of tide, which runs at the rate of 3 or 4 knots as here, in a depth of 5 to 6 and 7 fathoms. I do not think that the bed has been injured since it has come into possession of the lessee, but rather improved, from the fact that it has not paid to take oysters off it, on account of the thorough skinning in the years mentioned. I have bestowed three days dredging of ten hours each, both with my own dredge and that of Barber's, on the main bed, as marked in the sketch, and in a bushel of oysters, aged one and two years, could find only about eight or ten four year old oysters—no more in Limeburner's Creek bed, but on the small patch at entrance of the Moira, opposite the punt, there may be about 300 bags very fine old oysters; here, however, the ground is rocky and difficult to dredge, but by means of the tongs in a depth of 8 to 12 feet, the depth of the bed, I could very easily manage where the dredge couldn't work at all. I conclude from the foregoing remarks and general condition of the several beds, that from the time of the skinning—say from /72 until /75—the spat crop had failed, but has been very abundant both in /75 and /76, but from the present appearance of the old oyster now close on spawning, I fear the crop will be a very poor one. I find none of the two-year-olds in spawn. Barber's statement as to oysters dredged is amply confirmed by the testimony of many residents and a few former dredgers hanging about here at other work, and none believe that the bed has paid even the rent since in James' hands. However, if strictly conserved, in the second year from now, I calculate within bounds that the present 2-1 year's oysters will amount to two or three thousand bags, for a large area of the main bed is covered with them, but only a single layer. I do not think it possible that floods, whether high or low, can have in any respect an injurious effect on the deep-water beds in the reach from opposite Limeburner's Creek up to punt.

3.—

(a) Banks, from dam, all round the bend between, are composed of a sub-stratum of the friable sandy, blackish, mud rock, which seems to be general in these northern rivers; over this soil of a clayey mixture, in some parts pipe-clayey; in a spot or two drift sand, and one narrow spot in middle of said bend (marked on sketch), hard large boulders. The islet near said point is a black unctuous soil, overlying said friable rock, and over black soil a layer of drift sand—several kinds of trees thereon. The lower part of reach round the point is clayey soil over said rock, thence a grayish black soil overlying said rock. This, in fact, is the general character of the banks of main stream and tributaries, save the sandy spit at entrance, opposite the town, and a high bank, 200 yards long, in Limeburner's Creek, about 1 mile up drift-sand over same kind of rock, and the rock itself forms the bed of the river in that part—sandy, mud mixed with shell, and in some parts shingle—forms the bed of the river and oyster ground.

(b) There are in most parts oysters on mangrove twigs and stone, and in great abundance in several spots on the same sandy mud shore, where either shell or shingly clutch has gathered.

(c) As before said, none of the beds are of pure mud, but a considerable admixture of sand with it seems to be indispensable, at any rate such is the composition of every one of the beds on which oysters are found (lying on clutch of course) in any of these rivers which I have examined.

4. All the small islands marked in sketch are just awash at high springs, and the two points as well; those of the latter in Limeburner's Creek are also awash, but I think the water is not suitable for feed, at all events no oysters appear on shore or mangroves above the point marked. Islets are unalienated, 1st point is sold, 2nd doubtful.

5. Scarcely any four years and upwards, excepting about 300 bagfuls at point opposite "punt"; all the others aged 1 and 2 years. The quality is good. Extent of main-bed, $\frac{3}{4}$ mile by 300 yards; but all that reach from 1st point to 200 yards below "punt," excepting small patches of soft mud, is a good clutch-bed, composed of sandy mud, with a large admixture of shell of different kinds, and a portion of large pebbles running to size of small boulders of 100 or 150 lbs., and a kind of hard sandy crust, which the strong tide appears to constantly keep clean. Limeburner's Creek bed oysters as on the other, aged one and two years, but only about 200 yards by 50 in area. Round the islets on the Maria oysters formerly abounded, also on opposite shore, and now at small cost that ground could be put in an equally good condition. From the dam all round the bend oysters are found in isolated clumps, where formerly they abounded. Therefore these latter may be classed as good payable oyster-beds; for the latter will now pay, and the former is in a fit condition to receive spat whenever it chancies to be driven thither.

6. There is not much shell anywhere on the banks. The first point, Limeburner's Creek, and a few on the left bank a mile up. However, a good deal of both shell and gravel may be picked up.

7. Oysters are now on the verge of spawning, and no evidence to show that spawning has occurred since about this time last year, and the old people already referred to say they think it occurs about December or January, but at no other time.

8. Consequently this account agrees with that of Messrs. Fraiser and Barber.

9. Moderately sized areas.

10, 11. Already answered.

12. As to improvements none, unless resting the bed on account of the unmarketable age of oyster, and that of taking oysters off one bed and laying them down on another, which indeed may improve the gain of lessee, but certainly in no shape or way tends to improve the bed or oyster-ground; that is, the landlord cannot possibly benefit by any such process.

Memo.—As remarked in a former report, a fair clutch-bed is barring the present crop as intrinsically valuable as an oyster-bed, and if in a better situation for the purposes of culture more valuable. I find it very difficult to get suitable boats and men, and also conveyance from one river to another, not to mention the cost. A small craft—steam-launch or sailing vessel, suitably fitted for the purpose—will be indispensable to the proper management of the fishery, the value of which would amply justify the cost. I find residents obliging in every respect, and express great interest in the matter; but consider themselves aggrieved by the present system of leasing, and by restrictions on the use of oysters; while old dredgers complain bitterly on having their means of livelihood taken from them to invest in a monopoly placed in the hands of a few Sydney dealers. Mr. Andrew Barber has afforded me, in a very kind manner, any assistance I required, and every information asked for at Mr. James' request. His statement enclosed evidently bears the impress of truth; I wrote it at his own dictation.

I have, &c.,

A. B. BLACK.

I have been regularly engaged in dredging for the last ten years, and previously at intervals for thirty years. For the past twelve months I have been in charge of these beds for Mr. James—prior thereto, engaged for six months by Mr. Gibbon on the Clyde.

I, as a young man, got oysters on the Parramatta River; of late years, regularly, Manning, Camden Haven, Cape Hawke, Clarence, and at Brisbane. I was one of the very first workers of the Camden Haven beds, and their first condition was as follows, viz.:—I had to work a stake down into the mud through oysters and shell. The bed was 3 or 4 feet deep at low-water. Attached a 35-fathom warp to this stake, and worked from it day by day of six hours each, for at least twenty days. At first had to weight the dredge heavily, and then only got in a tide perhaps half a bag of oysters, until bed was "broken up"; then from the same spot, about one-third of a circle, shearing (as the direct line from stake was worked out) with flood on ebb to aforesaid distance in all, and in that space I dredged regularly ten bags a day—that is, 200 bags off that spot. Then removed stake to another spot, and thereon got the same quantity in the same time. This was the manner and this the average of about five boats for fully two years—in fact, until the bed got thoroughly skinned in the third year, when all of them left, when no more than two to three bags could be got per day.

I returned when said bed was supposed to have recovered, in about three years time; found the ground pretty well covered, but in an exactly similar space to that above stated could never get in a day more than three or four bags, and then every dredgeful contained only a few clumps of five or six oysters each, amongst half a bushel of shell, chiefly cockles. This is also what my fellow-dredgers experienced, and also what I have heard to be the case on every other bed at first and second working; and precisely what I experienced when I worked on the Manning beds for the first time. From reliable information the same facts were experienced in about 1869, 1870, 1871, when this Macquarie bed was first worked after a very long interval; and the condition of the bed now is that it is pretty well covered with oysters of two and one year growth, not fit for another year or two for market, with very few marketable oysters amongst them; and as in that case, i.e., Camden Haven, in 35 fathoms not more than half a dredge-full of oysters can be obtained, there being only a single layer, and considerable intervals between the clumps; but the bed is not only improving, but extending; and also fine clean clutch beds about the main bed, and also in other parts of the river. I have sent up to Mr. James in the twelve months I have been here only about 100 bags of oysters, and have shifted on to the main bed about 100 bags—part from bed in Limeburners' Creek, and part from dan-bed adjoining Port Macquarie—chiefly tidal oysters; which, however, do not grow so well as those would taken from deep-water beds.

Spawning.—The old oysters are about spawning now, but those of one or two years' growth have no appearance of spawning. On all the beds named my experience leads me to believe that spawning commences beginning November and finishes in February, provided fresher nor other unfavourable weather occur, which may delay the process a little longer; but in no case have I noticed anything resembling spawning at other times of the year. Therefore, I believe a close season during those months would prove favourable to the beds, in order to permit the young oyster to harden sufficiently to resist the action of the dredge.

When the beds of the Manning were leased, we, the dredgers thereon, conceived it to be a great hardship to be thrown so completely out of employment, and without warning. Accordingly, we got up a petition to Government against leasing, signed by all the Manning dredgers (about thirty), and by perhaps sixty residents, settlers, &c., who benefited more or less by the dredgers and their families. However, the petition appears not to have been noticed, and since that time neither I nor any of my fellow-dredgers who signed the same have made anything like a living thereat; but most of them, much against their will, were forced into other employments like myself, who have to eke out a living, together with a grown-up son, by sawing, &c. But I have hung on here, expecting that perhaps next summer, when a fair quantity of oysters become marketable, I may earn a tolerable living thereat.

I should be glad to lease ground for culture, especially on a lease sufficiently long to justify expenditure of time to bring it into a fair state of culture; for I have great faith in oyster-culture, especially from the mode in which I have noticed the natural extension of the worked-out natural beds, as also the extension of oysters on clean clutch-beds.

I have, &c.,

ANDREW BARBER.

CAMDEN HAVEN FISHERY.

1. I cannot give a better answer than that contained in the statement of Barber, in charge of Port Macquarie Fishery, confirmed by residents of this district, and by Bird, now a dredger here, and at that time employed on the beds—namely: that a man would work his warp-stake into the bed and not leave that spot for sixteen or twenty days, getting ten to fifteen bags a-day all that time; and that for a long time ten to twelve and even fifteen boats were so employed, until only three or four bags could be got, when all left one after the other. Some came back in about three years, only to get at most six or seven bags; worked until that also dwindled to two or three bags a-day; also, that the oyster since obtained has not been near so good as those obtained at first.

2. By over-dredging, most assuredly; and as far as I can find, by trying the bottom,—a comparatively easy and accurate process in this shallow water,—very little by silt, either flood or sea. I find an exactly similar condition of the clutch-bed and disposition of the oyster as on the other beds examined, viz.:—The clutch-bed furrowed, and long strips of mud between and in patches—clutch filled up in some places a foot or two deep, and oyster lying in streaks and patches, and many parts only isolated clumps, where originally they must have laid many clumps deep all over the bed. This state of the clutch may, however, be easily remedied under culture, by raking the clutch.

3.—

- (a) The banks of the river, creeks, and lakes (excepting where rocky spurs from the North Brothers enter on north side of Taylor and south side of Queens Lakes, also about $\frac{1}{2}$ mile in front and above Lauristown), are composed in some parts as all the south-east portion of Lake Taylor, $\frac{1}{2}$ mile on left bank of North Creek, bank running along oyster-bed in said creek, round bay at upper end of said creek and south and west sides of deep bay at heads, of the friable, chocolate-coloured sandy mud rock, common to all these fisheries already examined, only more blackish; in most all the other portions of bank is blackish unctuous clay or soil, and shell in beds from a few inches to 2 and 3 feet on all the level land. In digging foundation of saw-mill, 6 feet below surface, went through a pure shell-bed 3 feet thick, cockles and oysters, which seems to extend under the whole, of the site of township. Beds in river (excepting the outer bed in bay at heads, marked by a black-ink line which consists of a hard bed of ware-drift sand, which, as informed, has not altered materially during past fourteen years) are composed of either hard or soft sandy mud and shell, as indeed is the bottom generally, save spots of soft mud in parts of lakes and channel of river; all excellent oyster ground.
- (b) None of the beds without clutch contain oysters, but the banks in some parts are covered by tidal oysters.
- (c) None of the beds are of pure mud—always mixed, as already stated; but the subsoil—or rather, in many beds a sub-stratum of the common black unctuous soil—lies from an inch or two to several feet under the common sandy

sandy mud bed on which the clutch rests; but, as in one portion of the Hastings bed and in the bed in the bend of N. Creek, there is a trace of pipe-clayey stratum under the common bed of sandy mud and shell bearing the clutch.

4. Beyond the water-mark of river, lakes, and creek, the land for some breadth is covered by spring-tides, and in many parts by neaps also;—consists of the common rich blackish soil, and here and there black but not unctuous soil, a decayed salt-marsh vegetation, and (excepting in the latter) cockle-shell is pretty general. That within marks referred to is, I believe, still vested in Government, and all extremely well fitted for culture by trenches.

5. Quality fair, but not so good as formerly. Age chiefly three, four, and five; less of two years than there ought to be to maintain present rate of dredging, and scarcely any one year old; plainly showing last year's crop either failed, or from some cause or other—no doubt explicable when more attention is bestowed on this most important subject—the oyster did not spawn. The proximate extent of oyster-beds are marked by a *red ink line*; clean shell-clutch beds by a *blue line*; good oyster ground, hard sandy mud and shell beds with a light coating of slimy mud, by *red-ink dots*; good soft sandy mud and shell beds by *blue-inked-otted line*; and wave-drift sand banks by a *black ink line*.

6. There is a larger quantity of shell than in the other rivers fit for clutch. Almost everywhere on the banks and some distance back, I hear also, it spreads all over the level ground, and in parts, as at Laurietown, some distance up the spur of the hill, also on the high ground at the head—again it occurs over all the north-western portion of Taylor's Lake under from 2 or 3 inches to 18 inches of soft mud slightly sandy mixed with broken shell; also shell on all the islands. Consequently culturists will have abundance of material to work with, and Laurietown, in the very centre of the fishery, is well suited for a fishery township.

7. Some of the oysters appear to be in the first stage of spawn development, but very few, and of that I am by no means sure; as until about two-thirds advanced in development it cannot positively be determined without the aid of a pretty powerful microscope; no spat appear anywhere in fishery. I questioned two of the three dredgers employed in fishing, but they could give no useful information, however did not believe that oyster spawned all the year round; and third oysterman, named Handley, who has charge of fishery, would give no information, but a good deal of totally unprovoked abuse of self and all concerned, which I am certain two of his employers would not countenance, nor scarcely, I think, would Woodward the lessee of this fishery. Both Mr. James and Mr. Gibbon gave me letters to each of their respective employes in charge of beds, directing that every assistance and information required should be afforded, but I had no letter from Woodward to his manager here.

8. Neither of the two dredgers referred to could give me any useful information, nor could any of the residents.

9. This fishery is specially adapted for culture in small areas, while as leased to one lessee it would probably be an impossibility in this country on account of both capital requisite for such a large undertaking, and also on account of scarcity of labour needful for even tolerable culture; but more than two hundred families could find ample and highly profitable employment, children included, starting with less capital than that necessary to enter on a free-selection.

10. So far as I have examined, I think, at least until culture has progressed sufficiently to yield a portion of the crop of spat yearly necessary for a holding, natural beds being brought into such a low condition, ought to be reserved under very strict regulations, for the exclusive use of the culturists of oyster-ground, merely as spat nurseries.

11. I believe it would be a wiser policy to give to lessees the privilege of collecting the spat off the natural beds free of cost, at least for a given term of years at first—that is to be collected by selves and families. The term of such concession to be calculated liberally, so as to allow fair time to have a crop or two of spat from those laid down in the first year of occupation; but under proper restrictions rigorously enforced.

12. On ridge of bed of softish sandy mud and shell on which formerly I am told clumps of oysters appeared in isolated patches. It is situated just above Laurietown; defined by blue-ink dots with a red line in centre marking positions of laying. On this spot dry last of ebb (informed by a dredger) was laid twenty months ago 900 bags of tidal oysters of the ordinary kind and age at present abounding, seemingly about two years old. They lie in a narrow row about ten clumps deep, appearing to have been bundled out of the boat anyhow; nevertheless they have thriven well for tidal oysters, probably all the better from not being at once, from a habitat exposed to sun and air twelve hours every twenty-four, plunged into deep water as at Port Macquarie. In another year they will be fit for market, at any rate within two years. However, they have not grown so well as deep water oysters would have done in this favourable situation—I mean if the latter were laid on the covered portion of this excellent fattening ground. However, this example of rough transplanting affords conclusive refutation to the assertion that culture will not succeed in New South Wales, &c., &c., for here, on this bank of soft sandy mud and broken shell the oyster thrives and grows as well, or indeed better, than ever I expected to see a tidal oyster thrive when transplanted. Only clutch not having been laid on the bed previously, the bottom tier or layer of clumps furnishes the clutch and keeps the upper tiers out of the mud, consequently the lower tier is dead, but all the others are as said healthy and growing. Hence, therefore, we are furnished with two important conclusions:—First, that culture will succeed equally as well in New South Wales on new ground as it does in any other country, and in that respect its habits and economy differ in no way from those of oysters in Europe and America. Secondly that a clutch bed is an absolute necessity of proper culture, unless, as in this case, a layer of live oysters be sacrificed to furnish the clutch-bed. I may also add a third conclusion, not however so important as the others, as this is sufficiently proved by the original state of the beds,—namely, that oysters will thrive and grow well eight or ten clumps deep, but most probably not so well as if laid singly and in three or four tiers deep. The above is the only improvement, if it can be so called, and that is in no respect an improvement to the fishery. If a clutch-bed had been laid even on this strip of ground, such would have permanently improved the bed to that small extent; but, as it is, these will no doubt all be taken up in the same rough-and-ready manner as laid, and the strip of bed left bare.*

I have, &c.,

A. B. BLACK.

MANNING RIVER FISHERY.

1. The enclosed statement includes most of 1867 up to date, put down as spoken. It shows that both subscribers are observing men (and, I may safely add, also decent), inclined to prove for themselves with means at hand the truth respecting culture—of this again. I carefully examined both patches referred to, also evidence obtained from Mr. Gyler, manager of fishery; and several old residents of respectability not only confirm the statement, but also afford the following facts, which is embodied in a short account of the fishery from its commencement to the present time, viz.:—*Catti-bed*, in main river, (as marked) was the first worked by "Sam the Tinker," 25 years ago (1852), who set the blacks to dive for them. He sent now and then a few bags to Sydney by sailing-vessels, which produced 10s. to 15s. a bag. Not, however, till 1861 did dredgers from Sydney disturb the bed; but by end of this year 10 or 12 boats were working on it, averaging eight or ten bags daily, in five or six hours. However, 12 or even 15 might have been obtained if chosen, but fear of glutting market prevented. The ordinary price was 5s. to 8s., running up to 15s. in time of scarcity, and in a glut nothing. I fear this element of uncertainty exercised a strong fascinating influence over the class of men engaged—"light come light go." This is the only *shell clutch bed* in fishery. It lies on a flat at entrance to Catti Creek, 5 to 6 feet deep, falling suddenly on to a narrow shelf 20 feet wide and 22 feet deep, then equally abruptly on to the bed of river in this bend 40 to 45 feet deep, and a strong ebb, but less strong flood, running over all the bed—clutch at first, on shallow portion, laid very thick, now scarcely a vestige remains. The deeper portion,

* In relation to the "tidal oyster."—Since startled by the positive statement, based on 25 years experience of George Fraiser, manager of Clarence Beds, "That tidal oysters spawned several times a year," I have closely observed, as far as opportunity would allow, its appearance and habits, in order to discover anything to justify that conclusion; as yet however, without further success than that of finding in some favoured spot in several rivers or creeks, spat seemingly of various ages or rather degrees of growth—but always apparently a well-defined period between each growth. Obviously, however, unless positive of the time of spawning or that of spawn setting, judging by mere growth alone is a very unsatisfactory mode of determining the age of a creature so extremely susceptible to many external influences, especially while living in an abnormal condition, as in that state it is confined between the verge of low-water and high-water marks. Hence, according to the run of tide in these rivers it is deprived of food 12 to 10 hours each day and a fair supply the remainder; also an unusual degree of either cold or sun will impede growth; consequently, in favourable circumstances its growth at that early state of life would be rapid, while unfavourable circumstances might arrest its growth even one or two months. When pondering the matter in connexion with this heap of tidal oysters transferred to a less dry and more fertile bed, thereby to a more copious supply of food and better shelter; also on the mysterious law of lunar influence on fishes, whether dead or alive in water, or out of water, (a fact well known and operated on by fishermen), also on the movements of migrating fishes as the period of spawning approaches, likewise on mussels, &c., on tidal beds, extending even to the gestation and other vital processes of mammals, &c.,—it seems probable that under such abnormal conditions the general spawning time of tidal oysters may be increased once or more during each year under the powerful influence of the clear moon in this generally dry country. However as the propagation and preservation of seed is one of the most important elements in this oyster industry, no means ought to be neglected to determine the spawning question. I shall certainly as I proceed neglect nothing that seems to tend to such solution.—A. B. BLACK.

2. The minute description given will show the injury done to beds by over-dredging, but it remains to point out the evil effect clearly manifested by the continuance of dredging. I have said last year's crop was bad, and from all appearances the present also will be nil. It cannot be expected that the lessees (I say lessees because there is a co-partnership of three—James, Clark, and Woodward—equally interested in all these northern beds) will baffle one jot of contract while rent is to pay—in this case £1,150 yearly. Now although this fishery in its impoverished state, while in their possession may not have paid, yet they have been recuperated partly from profits of other fisheries and partly from monopoly of beds held in few hands. Nevertheless they will, while contract lasts, continue to take from it the last marketable oyster. As shown by the fact that a while in fair condition the fishery could support twice the number of boats, procuring a larger quantity of oysters, though a lower price was obtained; now, however, strive from daylight to dark, the five dredges employed can each only obtain over all this extensive ground eight bags weekly. One working Catti, Bar, and Scott's Creek beds; three, till last week, now four working south passage beds, and working all the time the spawning process has been in progress. I must say that the men are very careful in culling and throwing the young oyster back. Probably, also, lessees are strict in ordering only mature marketable oysters to be forwarded. Still, in each case this care, though exercised on behalf of respective parties, is none the less most injurious to the reproductiveness of the beds, also for the sake of immediate profit, as spawning oysters won't keep. The oyster is not sent away *while spawn is flowing white from it over the boat when dredged*, yet both immediately before and after, when not actually in that state, it is sent to market. Consequently thus stands the case. No violent natural cleansing process has of late occurred, nor has there been a considerable number of spawning oysters ready to avail of the clutch thus cleansed as at the time above mentioned; but instead, the clutch has been destroyed, as much as a pebbly bed will can, the shallow portion of Catti bed is left with only a patch of a foot or so of clear clutch at long intervals, and everywhere shell and pebbles alike covered with slime and fine mud, the latter constantly stirred up by the bow dredge, while at the same time there probably does not exist in the whole of the fishery a sufficient number of spawning or mature oysters to fully stock a single bed, especially considering the many chances existing against the spawn falling on the right spot. Hence, obviously, while this process continues, this very valuable fishery will be reduced from bad to worse. I have bestowed unusual pains in examining the beds, and sought local information wherever I could find it, and the result is, maturely considered, that it would be a vast public gain to cancel the lease forthwith, even at the cost of returning the present year's rent, and then close the fishery until the future mode of management shall be determined. I submit these, my clear convictions, with much deference, and trust such will not be considered beyond my duty.

(a) The banks of main river consist of 8 feet of lighter-coloured soil than that of most other rivers, that of south passage darker and more unctuous, the banks of both resting in many parts, more apparent towards both the N. and S. heads, on the blackish, friable, sandy, mud rock. Some, but not many, depressions of general level of surface. Where these exist soil generally sandy. Shell abounds in south passage.

(b) In some parts rocks have gathered oysters, but not in all. The tidal oyster is not so abundant as in some other fisheries, and found chiefly close to beds in thick patches on sandy mud where shell or pebble clutch has accidentally been drifted, and also around Pelican Bay, wherever any kind of clutch, whether of soft black mud or the usual sandy mud, offers a resting place. Those on the soft black mud in Pelican Bay are the finest tidal oysters I have ever seen.

(c) None of the beds are of other mud save the sandy mud mentioned, mostly hard, but sometimes soft—and all with clutch of some kind, excepting in the tidal lagoon on point opposite bar bed, where there are fine tidal oysters in clumps lying on the bare black soil, but no doubt at first a shell afforded foothold.

4.

4. There are few marshes available for culture. That last-mentioned is an excellent place. North side of Pelican Bay, for 40 or 50 yards back, Charlie Island, lower portion Cabbage-tree Island, Luttrick Island, and bottom of bay east of Luttrick Island, all these consist of the ordinary soil; I believe all of them are unalienated. Pelican Bay and Island is most excellent oyster ground, only 1 to 3 feet deep anywhere, save about 200 yards \times 10 wide, 5 feet deep, and large flats dry at half ebb.

5. The quality is good, 25s. per bag I am told they produce in Sydney; as before mentioned the old are scarce, two years, not so many as ought to be to meet expenses for the next two years; little or no crop last year, and no signs of more this. The extent of beds about that marked; but isolated clumps are found all over the south passage, Graham's Creek, south mouth of Scott's Creek, and about Luttrick Island, outside of beds as marked.

6. In Pelican Bay, as marked, there is a mound of shell, height 50 feet above high-water, 350 yards long by 60 wide; then at base along banks of Pelican Bay on east side 200 \times 30 yards \times 9 feet; on west side 300 yards \times 40 yards \times 7 feet, but running into bed of creek, also deep beds along this creek at intervals for $1\frac{1}{2}$ mile. The whole are fine large and perfect oyster-shells, an exception; for most shell beds are largely composed of cockle shell. Then the whole reserve for township, south bank of south passage, is a mass of shell; this would form an excellent fishery township, and another, the sand-spit opposite Bar bed; nearly every portion of south passage banks, east of Blair's Creek, consist largely of shell; all however save reserve is sold. The vast deposit head of Pelican Bay belongs to Mr. Macready, Pyrmont.

7. The oysters had begun to spawn middle of January, and completed middle of February, last year about one month earlier; but I have been told that they more often spawn before than after Christmas, or from end of October to end of February.

9. In small areas—As proof thereof, take first William Windsor's patch of 200 feet \times 20 in south passage, just on the edge of low-water, here then in that space 100 bags are laid of oysters, aged one year, chiefly tidal oysters, a portion one year and less deep water oysters; the latter he considers his employers may object to, hence he desires to say little about them, however, both he and Barry, whose stock consist of the latter sort from cullings at various times with only a few of the former find that the deep water oyster is far more profitable than the tidal to transplant; now it seems that these have increased about threefold in size, and this patch is not quarter covered. However, as it is, the cost was the keep of a man for three weeks, and also some of his own spare time. The result at the Sydney market price, say only £1 = £300 within two years, for only a small portion of spare time during that period, if that bed were his own.

David Barry's patch is on same bank further west, and similar in every respect, except that there is a small muddy spot over which he carelessly cast some pebbles and shell; the stock is young cullings and a few tidal oysters; however, not more than ten or twelve bags, as he is constantly taking them up in order to complete slackly filled bags. Both believe thoroughly in culture, so also do the other dredgers, and not only them, but all the residents on the river with whom I have come in contact, all seem to know of these two experiments, and profess deep interest in a Bill which would afford reasonable encouragement to engage therein. But all express themselves deeply aggrieved that the whole profits of a local product should go to a few Sydney dealers; also strongly speak of the supineness of Government in permitting the destruction of the fishery. They all seem to watch proceedings narrowly.

10. 11. These dredgers, together with manager, have hitherto favoured licensing, but that I suspect was the cry taken from Sydney shop-keepers, who desired above all things to prevent any Government interference with the fishery whatsoever, and that they should continue without let or hindrance to do as they pleased therewith. Hence the cries arose "license boats"—the next best substitute for free user; and "our oysters are different from other oysters, therefore culture will neither answer nor pay in this country." On account of few dredgers being able to keep money they were completely under the thumb of dealers, and whenever they got to Sydney almost all of them were indebted to one or other of the dealers to get back to fishery; hence no wonder "the one danced as 't'other pined." However, the men under consideration seem one and all to be steady, thrifty, intelligent men; and once the idea opened to them, especially in view of the experiments described, that probably the new Bill might contain provision for leases of sufficient area for culture on encouraging terms as to length and rent, they all on reflection bethought of procuring young stock free of cost as a necessity of culture. I observed that when this idea was fully mastered, the licensing system was dropped, and all would be right if they could by any means surmount the first two or three years of culture.

12. No improvements whatever. An oyster shed at Croki for convenience of shipment, but no use to fishery.

Gentlemen,

Your most obedient servant,

A. B. BLACK.

STATEMENT of David Barry and William Windsor, married men, permanent residents on south passage.

19 February, 1877.

I, David Barry, have been constantly engaged dredging since 1867, and in that year commenced on south passage; got then three to eight bags a day, the latter a spurt; generally twenty bags a week of five days; but at first opening of bed the usual thing was eight bags a day; then I worked a while in the first rush to Port Macquarie, when the general thing was fourteen bags per boat (two men) a day; then went to Cape Hawke and got ten bags a day, eight boats working together, when we got the blacks to cull for us; then returned home to south passage. In each of the last-named cases, when no more than two bags at most a day could be procured we left. The passage then had not recovered to allow more than three bags a day to be procured; at about this rate we worked nearly 18 months, eight boats in winter and eighteen in summer, until the catch was reduced to one bag a day; but most of them now left starved out, but I being married, and my home in south passage, remained. When the beds were closed, I and others, about four or five boats, smuggled chiefly on Cattai and bar beds, where the oysters were young, nice, suppy oysters, and sold high in Sydney. The average at first was four to six bags a night in 4 or 5 hours; this continued from time of closing till the beds were leased, gradually diminishing, however, to two bags a night. I and partner were fixed towards the latter part of time referred to. Then when beds were leased I was employed in south passage by lessees, and so till now. At first seven boats were employed by lessees, and entire passage was divided into seven beds, each the exclusive stint of one boat; some beds were better than others; some only got one bag, mostly however four bags a day. A flood intervened and damaged some of the beds, which however was found to considerably benefit others, on to which the oysters had been drifted. This flood, but especially the gradually diminishing quantity of oysters prior thereto, actually starved out four of the boats, henceforth only I, William Windsor, and George Shoober, remained, until we were compelled after two months' work to seek a rise of price per bag, 3s. 6d. first to 4s., then 5s., at which it now is; and last week one more boat was put on; now the average a week is eight bags. Hence it may be assumed that two of the best beds in the Manning, viz., Cattai and bar beds, were skimmed before beds were leased. These were convenient to place of shipment, therefore less dangerous to work while closed.

Spawning.—Last year about end of December this year, spawning just about completed. They are about one month later this than last year, and which time is about spawning time of the above-named beds, i.e., Port Macquarie and Cape Hawke. I am positive that at neither of these fisheries do the oysters spawn all the year round—only between 1st Nov. to end February.

I, William Windsor, fully endorse the above statement of David Barry, having read it each in other's presence—as witness our respective signatures,—

DAVID BARRY.

WILLIAM WINDSOR.

I, William Windsor, had dredged in south passage, being married, and having my home here, 12 months before beds were closed, I was engaged by lessees as soon as fishery was leased, and allotted one of the beds, No. 9, which was a poor one; after flood referred to the arrangement of allotting a bed to each was annulled, and beds worked in common; I then got permission to occupy a portion of the foreshore for the purpose of laying down young oysters, chiefly tidal oysters; I solicited permission and obtained it, but on the understanding only that I should be paid nothing for laying them down. Hence the experiment was at my own risk, and I desired it for my own satisfaction, in order to learn how far such transplanting was likely to succeed and pay. I laid down, with assistance which I paid for, about 100 bags, on a space of 200 feet long by 20 feet wide, from bank into a depth of about 1 foot low water, age of oysters when laid, about 12 months. I found in breaking them up many were destroyed, therefore the greater part were laid in small clumps so as not to destroy an undue number, which otherwise would have

have been the case. These have now been down 18 months, and many are fit for market. The shape has somewhat altered, being inclined to approach the appearance of a deep-water oyster—the colour also—and have increased in size, threefold. I have carefully attended them, and separated as many of the clumps as I could without causing injury, and generally kept them clean of deposit. At present, I believe, in consequence of lying pretty close, the spawn has caught rather abundantly this season. Lessees still continue to respect said agreement. The only pecuniary advantage I have is to be able to keep up a good weekly average, while other portions of bed may not yield such during winter, interruption from bad weather, or floods. Receiving 5s. a bag, as for other oysters. The Manning oysters command the highest price in either Sydney or Melbourne; hence we average no more than £2 weekly, working 12 hours daily, against 6 and 8 hours formerly.

WILLIAM WINDSOR.

Both the undersigned have tried the experiment of laying, though the one without agreement with lessees, and firmly believe that on good ground, cultivated with care, culture would pay well; but unless a long and secure lease be given at a reasonable rate of rent, there would be little to justify the attempt, and if so, rigid restrictions would be necessary.

WILLIAM WINDSOR.
DAVID BARRY.

CAPE HAWKE FISHERY.

1. Prior to the opening of the bar, according to John Pennington's statement in 1848 or 49, it seems the only oyster-bed was that marked No. 1, on which they were thick; however in 1859 this bed was found to have been either silted over or oysters swept away by such a strong rush of water as that likely to be produced by a flood so high as to sweep away the sand-bank which closed the bar. The opening of the bar showed, as in the case of south passage (Manning), that it is indispensable to the health and fertility or spread of oysters to have a fair supply of tidal water regularly fresh from sea. However, after 1859, when settlement began, several other of the beds were producing, and the number has been gradually increasing, still, however, No. 12 is vacant, though possessing all the appearances of a most excellent bed. No. 9 was infertile till 1872, and perhaps the next good spawning season may also stock No. 12 and some of the other equally good beds.

2. I beg to refer to enclosed statements. The beds are all shallow, generally from one to three or at most four feet, therefore dredge is not employed and tramping over gathering is rather beneficial than otherwise.

3. As shown in sketch, the lower portion, next bar is filled up with wave drift-sand slightly intermixed with mud, and only two or three narrow shallow channels between.

(a) Shores generally of creeks and islands consist of blackish unctuous soil, in many parts lying over a horizontal stratum some feet thick, of the common chocolate friable sandy mud rock; and on east side of lake, south, to narrowest part betwixt lake and sea, thence to Booty Hill, is a sandy spit drifted up in dunes covered with the ordinary kind of brush and tree congenial thereto; rocky round Booty Hill. Beyond, south-east portion, on the friable rock lies two to three feet soil, over it one to three feet pure oyster-shell, and above two or three feet more black soil; this extends to south extremity, thence along to Mr. Newnan's (settler) blackish unctuous soil; thence along west side the land is elevated, and shores rocky.

(b) Very fine rock tidal oysters extend all along to north-west corner of lake where marked; but on east side no farther than opposite middle of Wallis Island; yet all round large island south of Wallis Island, and on west corner of Wallis they abound.

(c) None of mud, but wherever marked with blue line the beds are composed chiefly of shell and sandy mud similar to those producing oysters, and in fact many portions of them are seemingly better suited for oyster-bearing; indeed, it is not unreasonable to suppose that in time, even by natural means, most if not all will become fertile. However, Mr. Newnan's (settler) selection marked south-west portion of lake, laid some down in front thereof, which has thriven and even increased. Also Mr. McCay, four miles up Woolambee from Govt. cutting on No. 2 bed has laid some which thrive very well. Hence it is proven that oysters will thrive artificially laid both at southern extremity of lake and well up Woolambee River.

4. Salt-water lagoon in Wallis Lake and that at north shore with a considerable extent of marsh around each, especially the latter, as all the islands (excepting west and north sides Wallis Island), together with that around both creeks and up the Woolambee about three miles, are admirably suited for trench culture; and lagoons for beds, but none of the lake shores are suitable.

5. Area about as marked in sketch. Beds No. 2 dry at half-ebb, and portions of 3, 7, 8, and 10, the latter running into two and three feet at low-water. A great portion of all the oyster-bearing beds; also non-bearing beds marked with blue ink, are hard shell slightly intermixed with sandy mud, while portions are softish sandy mud, all, however covered with various kinds of marine vegetation into which you sink to the ankles; and a considerable extent of those in lake are thickly dotted over with large live cockles each bearing a tuft of algae, however, all are apparently equally well suited for oysters. Cockles and oysters thrive well together; indeed, the oyster frequently attaches to a clean live cockle as to a whelk, but the cockle does not devour it as the whelk does. Both whelks and periwinkle (the veritable *Littorina littorea*) abound in both lake and estuary, each in its proper habitat.

6. There is an immense amount of both in the beds described, most of them many feet thick and in layers on islands; also mingled with soil everywhere save in the sand-spit which separates a portion of east side of lake from the sea; and none of the islands are alienated nor any of north shore.

7. Information relating to spawning I have succeeded in eliciting pretty fully in statement enclosed. I may, however, remark thereon that both John Pennington and John Hughes are both very intelligent and observing men, and the former has had probably more experience of the subject than any one in the Colony, having been during sixty-five years constantly to and fro to nearly every oyster-bearing river, and mostly dealing or procuring them for sale. I have also carefully noted down exactly what each desired to say; besides, every word relating to the fishery can be confirmed by many of the residents. I may remark in addition that as in Europe and America years occur in which oysters do not spawn; also, that whether spawn be fertile or not, there is like to be without artificial aid a lapse of several years in the natural course betwixt each prolific crop. I believe this to be universally the case. I shall take a future opportunity to refer to this subject.

This fishery affords by far the finest opportunity to accurately study the habits of the oyster. The water is far clearer than that of any of the northern rivers, and the beds do not exceed a depth of four feet, generally two and a half low-water. I have waded over all the oyster beds and a great portion of the ground in lake enclosed by blue lines.

The very clear water also affords an excellent opportunity to observe some of the oysters' enemies. A species of cephalopoda is rather numerous. It forms a hole and gathers around it a bushel or two of oysters piled up above the level of the bed, apparently partly for concealment partly for food. I have watched it busily conveying the oyster to its nest. I have also observed two different kinds of crab deliberately engaged chipping off the edge of the oyster with its chela, and when it has made the opening sufficiently large, insert either of its foremost claws, divide the muscle and abstract the oyster. It's astonishing how quickly it opens and devours the oyster.

8. According to both statements, while prolific spawning took place, probably end of October or early in November, barren spawning took place sometime in January, and as in England an oyster here and there is always found on the spawning bed which does not spawn, at least not that season. It appears also that at least in this fishery spawning takes place nearly at the same time over all the beds, and there is no evidence whatever to show that spawning happens more than once a year.

9. Moderately sized areas.

10.

11.

12. No improvements whatever. The lessee by a lucky hit got the fishery with a fuller crop than ever it had on it before (No. 9 bed additional), and immediately thereafter before oyster had grown to one-third its mature size, seven hundred and thirty bags are shipped to market. The evidence proves unquestionably that the oyster at the most only attained maturity last year, indeed some of them not yet. However, to this date about six thousand bags have been got. In all probability, if allowed to remain until the three years (as they ought to have been) those six thousand would have increased at least ten thousand bags, which, together with the two thousand to three thousand remaining, would give the amount of full crop of 1872, viz., twelve thousand to thirteen thousand bags—by no means a bad investment for £45 a year; and not a stiver of this large gain is spent on the fishery. Moreover, it is now only left with the specified number of tidal oysters. Certainly they are of better quality than the tidal oysters of any other fishery I have seen, but that does not mitigate the evil.

As

As may be inferred, this perhaps is the most interesting and instructive fishery in the Colony; accordingly I have examined it most carefully, and as already said, every word of this report together with the statements can be amply verified. I enclose plan of fishery, sent. It will be perceived that such a thing is of no earthly use to me; it ought to be on a larger scale and much more accurate than that is—many of the islands and the creeks are omitted. I regret to say I have been delayed by illness, but now recovered, and to-morrow start for Port Stevens fishery. Township sites will be needed here, and I would strongly recommend the unalienated portion of the Forster reserves, Cockatoo Island and Wallis Island. This will eventually become a first class general fishery. I have expended all the forms.

I have, &c.,
A. B. BLACK.

Manager Mr. John Hughes' Statement.

Hearing in Sydney that Manning men had "rushed" Cape Hawke and were making a fine thing, I started thither, and arrived December, 1869; found about twenty men had been engaged about four months, and oysters getting scarce. By February, 1870, Manning men had left, and only I and three other residents remained. By May these also were starved out, and I continued till mid June. Got first portion of time six hags weekly; latter portion only three and four. This was the average of the others, while for two to three months of first working fifteen to twenty hags a day was a common thing on most of the beds, and as much as forty bags daily off Nos. 2 and 9 beds. Rakes and shovels were used thereon. June 25th, tried Smith's Lake, but oysters were scarce, though fine quality. Got only fifty-six bags in thirty-four days. Price during this time, 6s. recommenced October, 1871. Carefully searched the beds. On skirts of beds found narrow hollows, each containing a hag or two of fine oysters which had escaped notice in the general scramble. These, together with oysters trodden into the mud by so many tramping over the beds, were now grown into fine oysters. Kept four boats going at an average of ten weekly at first, to four and three by April, 1872. By this time, however, two men had gone sawing, the third, a Chinaman, fell sick; and end of April I engaged at punting. I do not believe fifty bags remained on all the river beds together. An idea has always obtained among oystermen that one or more deep water beds exist somewhere, yet the district has been searched in vain.

End December, 1872, to the astonishment of every one in the district, as by magic, every bed on which oysters previously grew was more or less thickly covered with young oysters the size of a threepenny bit; and September, 1873, the fishery was leased, and neither Government nor lessee knew aught of the valuable crop it contained. I was engaged to manage the same by Company at 3s. a hag, but at my risk till outside of bar. Company were anxious to realise, and I was set to work end October, 1873. Chose No. 4 bed, as these were the largest. I do not know how many filled the bag, but two men were eight hours loading the boat, whereas in 1875 got same quantity in four hours; and in 1876, and now fill the boat with ten hags in from two to three hours. This, at least, shows that the spat of December, 1872, are still growing; and on none of the beds, although some beds grow larger oysters than others, have the oysters ever yet attained the full size.

From middle October, 1873, to end April, 1874, two boats, two men each, sent lessees 735 hags. From September, 1874, to May, 1875, sent 1,170. From August, 1875, to May, 1876, sent 1,770. From July, 1876, to present date, 1,600 hags. In addition to which about 300 bags spoiled on bar-bound vessels, although specially careful thereof, as I receive no pay for such. Nos. 2 and 4 beds, the latter small, have as yet been very little worked, but all the others are nearly bare. However, these two beds, though inferior in quality and size may, together with the scrapings of other beds, yield 3,000 to 4,000 bags; and although the spawning of 1872, they have not yet attained full size,—chiefly tidal oysters.

Spawning.—Seven seasons have passed during my residence here, but I cannot say I have particularly noticed any save this last; that of 1872 must have occurred six weeks or more before I noticed the spat, while that of 1870, 1874, and 1875, I noticed by the milky spawn flowing from them in the boat while bagging them, also by the falling off in condition consequent on spawning, yet this was merely in relation to their safe transit to market, as in that state they spoil in a week instead of keeping three and even four weeks as at other times, and not in relation to reproduction. In 1876 I am sure no spawning took place, because the oyster, for the first time (save 1873, when I suspect it was too young) since my arrival showed neither signs of milkiness nor falling off in condition throughout the whole season. Now this year the bareness of many of the beds and the increasing demand for the remainder, as well as the barren results of every spawning season since that of 1872, aroused my anxiety respecting the result of this season's spawning; accordingly I watched narrowly, and observed on the 1st February, about noon, that No. 2 bed was spawning on an ebb tide and light westerly wind. This must have occurred simultaneously over the whole of the beds. (The other boat was working on No. 10 bed, and noticed the water whiten and spawn flow from the oysters gathered and in the boat, about noon also.) Bed No. 2 is nearly untouched, probably 2,000 bags on it. There was at the time about one foot of water on the bed. The water all at once became white, and drifted slowly down amongst the sand-banks which fill the lower portion of fishery towards the bar. Numerous fish collected amongst it, seemingly to feed on it. From the obvious abundance of spawn, I expected a crop similar to that of 1872. However, excepting under platform on edge of low-water in front of township on which oysters are bagged, I have looked in vain all over the beds for a single spat, and I gather sixteen bags daily. It is also a fact that in each previous year, save 1872, the proportion of yearly spat has not exceeded one to twenty older oysters.

3. I am quite sure that on this fishery the oyster spawns only once a year, and in some years, as 1876, no spawning takes place. The months in which it generally takes place, at least since I have been here, are January and first week in February, excepting in 1872—probably early part of November—as the spat seemed to be about six or eight weeks old when first observed. Now, considering this has been the only prolific crop, may not early spawning be an advantage and latter spawning abortive?

The prevailing weather at time of respective spawning was in October, November, and December, 1872, unusually strong north-easters, frequently heavy gales, but dry, though dense clouds, and overcast seaward. Punts that season were frequently windbound, and for days could only make progress at night when wind moderated.

1873 was wet and variable; the other seasons were variable, and moderate easterly weather, and dry.

Respecting management of fisheries.—I, as well as other oystermen, felt deeply aggrieved, and unjustly treated when the beds were leased without due warning, more especially when a little reflection would have shown that it was a scheme calculated to exclude oystermen, and throw the whole of the fisheries into the hands of men who were notorious for unjust and unscrupulous dealing in every relation with oystermen. It threw a great many men out of employment who found great difficulty at the time to get other work, and many families were starved in consequence. Yet I have no desire to return to a similar state of things, nor to a system of licensing as was proposed; for I have now seen enough of these beds, also from an experience of five years employment in the oyster trade in Sydney with Mr. G. Clarke, Market-street, about one year in a shop of my own, South Head Road, also close on a year with *Oyster Company at Balmain oyster-store*, then six months at first opening the oyster-beds, Brisbane, to feel assured that without a *strictly enforced close season* of four or five months licensing would be a mere change of name instead of a change of management: an encouragement of instead of stopping all the evils of skinning. I for one, and I also think most other oystermen, especially the steady men of the class, are strongly disposed to engage in culture under a reasonably long and secure lease, especially if lease were made renewable under a system of assessment by arbitration on expiration of lease; and in addition to the necessity of preserving the oyster and spat during the breeding season and while the oyster is recovering from spawning, a *close season* also would be an absolute necessity to enable, or it might be to compel negligent farmers to improve their respective leaseholds; while at the same time the licensee, if licenses be granted, would be thereby restrained from destroying the young oyster at a time it is so extremely liable to injury; likewise the relatively few Sydney shop-keepers could very readily arrange to sell fried fish during that season, which is also a very profitable trade, though not perhaps so profitable as that of oysters; therefore, it can by no means be deemed a hardship even in their case, while it would also have the effect of promoting the interests of the other fishery. Moreover, the "run" on the oyster the first part of the open season would fully compensate any loss of trade likely to be thereby sustained.

Respecting licenses.—Suppose, for example, I and others took leases for culture in this fishery, speculating on stocking our respective leaseholds with spat off the nearest beds, and oysters got scarce in the Manning, or Sydney dealers were short: what would hinder the Manning licensee coming across as before, or the Sydney dealer advancing cost of license, price of boat, provisions, &c., to any one they could pick up on the instant, taking care, according to custom, to exact to the uttermost farthing the sum so advanced out of the oysters first sent up; and as the custom heretofore, clearing off in a short time both marketable oyster with attached spat? Is it at all likely either of those parties would sell young stock to us unless they got a price equivalent to that paid for marketable oysters? Now the time requisite to separate the spat would be, at least, per hag

bag equal to ten times that required to fill a bag of marketable oysters. Hence, therefore, we would be required to pay at least fully ten times more for spat than would be obtainable in Sydney for the grown oyster; but, knowing our necessity, would such men be at all likely to sell even at this rate? Obviously in any way we would be at their mercy! Consequently, unless some special and strict reservation of beds be made for the sole purpose of enabling the leaseholder to supply himself with young stock, what advantage would the leasehold be to the individual? But should it be seen advisable to grant licenses, I submit that licenses should be granted for one fishery district only, and in such number only as that district will bear; and of course if licensee desire to remove charge in addition, a similar fee for the district removed to, viz.: £10 or £20 which is not too much for an oyster license. Lessees also should be permitted to hold licenses, *i. e.*—if licenses be granted.

JOHN HUGHES.

SIGNAL-MASTER John Pennington's Statement.

From 1831 I had occasionally traded to Cape Hawke, but in 1859 I came to reside, engaged by Mr. John Booth to punt shingles, &c., to traders; thereafter engaged by Government as Signal-master.

Forty-five years ago we got only cedar, and crew generally took a few bags of oysters. Then the bar was closed, and had been as long as the blacks could remember, consequently we loaded outside, and only came when a cargo was ready for shipment. In 1848 or 1849 the bar was opened by a heavy flood, but not till 1859 was there depth of water to cross, and in that year I took the first vessel over it. Thenceforward depth has continued pretty steady over eight and nine feet, excepting an occasional interruption of only a single neap-tide.

Forty-five and forty years ago we had discovered six or seven of the eleven beds which now produce oysters. However, only on No. 1 bed, and a few tidal oysters on beach in front of present township, did we find any; but in 1859 several of the beds had got stocked, and in October or November, 1872, all the shell beds not in the lake, excepting that numbered 12, were more or less well stocked, as follows—Before 1863:—

- No. 1 bed was the only one stocked forty-five years ago when bar was closed, but in 1859 it had been silted with sandy mud and shell. In 1872 however, it had come in for a small share of the crop, and since then a few clumps are found on it. Probably this bed had been silted in the rush of water when bar was opened, as it just lies in the way.
- No. 2,—through which Government cutting runs—was in 1859 covered two or three tiers deep in many parts by good saleable oysters, but skinned as clean as a whistle in 1864.
- No. 3. I speak of (1859) as well stocked as above.
- No. 4. Fairly stocked, not near the quantity, but finer quality.
- No. 5. Not many, but larger and better shaped, and fine quality.
- No. 6. Small patch, few oysters, but superior quality.
- No. 7. A clump here and there, apparently beginning to form a bed.
- No. 8. None for some years later.
- No. 9. None for some years later.
- No. 10. Small bed, finest oyster in fishery, three and four tiers deep.
- No. 11. Only here and there a clump, apparently in process of forming.
- No. 12. None, nor any yet, though as promising a bed as the best. While trading for cedar we got a few bags each trip off No. 1. and from 1859 I occasionally send up a few got off the most convenient bed.

In 1868 I found, in all, three bags on No. 9, which I sent to Mr. Clarke, Market-street. I asked only 10s., but the oyster was so superior that he was extremely eager to get more, but I searched in vain, yet in December, 1872, this bed was covered with young oysters.

In 1863 about nine oystermen came up from Sydney, gathered them up in baskets and got blacks to cull on the shore, leaving the small ashore to die. About the middle of 1864 the beds were completely skinned, when they left. These men got 2s. 6d. a bag, and Mr. John Booth had a contract to convey them in bulk to Sydney at the rate of 3s. a bag.

If I remember rightly, no oysters again appeared until about Christmas 1866, and after that the beds got again well covered, but not so well as before 1863, nor so well as in 1872.

In 1869, about July, eighteen or twenty men came over from the Manning, and by April or May, 1870, had cleared every bed of old and young alike, excepting small pockets here and there, about the edges of the beds which were overlooked, and those trodden into the mud, which for some time afterwards kept three or four of resident oystermen going till they were eventually starved off.

In December, 1872, to the surprise of every one, the beds were noticed to be covered with a thick crop of young oysters the size of sixpence, and now for the first time No. 9 bed, on which in 1868 I could get only three bags, was also densely covered, but none on No. 12, though as before observed, as likely a bed as any.

In 1873 beds were leased, and soon after, although oysters were very small, two boats were set to work on No. 4 bed. These boats, with only a month or two intermission in the winter, have been working ever since. Now only two beds, which have been little worked, appear to have anything on them; one of them is the large bed No. 2—the spawning of 1872—which has not yet attained to maturity, or to the size that oysters were before the skinning of 1863. However, although there are not so many on it as before that time, yet I have never seen a bed like it excepting those flats inside of Towra point, south side of Botany Bay, of some acres extent, covered several tiers deep, sixty years ago, when I and nine others were engaged burning lime off it for Mr. Street, who had the Government contract to supply lime.

Spawning.—I am sorry to say, now I see the importance of the question, that I have not taken much notice of spawning, indeed I never knew a dredger who did. However, when I think of it, it seems to me that, as in this case of Cape Hawke, the spawning is prolific only every other year, as in 1866 and 1872, when, as aforesaid, a most abundant crop had covered the beds before any one knew. I am perfectly certain of that of 1872, and of the kind of weather at the time, but not so clear whether the other in 1866 or 1867, but whichever the year 1866 or 1867, I am positive the weather was similar to that of 1872, unusually strong north-easterly winds, *i. e.*, black north-easters, thick overcast weather seaward, but dry, and generally moderate at night; whereas the ordinary summer weather here is lightish north-east to south-east winds, and a stiff souther now and then, and at times a heavy thunder-shower or a few hours' rain from south-east.

I am also positive that spawning must take place, if not at the same time nearly at the same time, over all the beds, at least on this fishery, though not at the same time every year, as that of the most remarkable must have occurred early in November, while the others, excepting that of last year, occur sometime in January. Those like myself who live pretty much on an oyster and fish diet, can readily tell the time, for then for a few weeks before, the milkiness of the oysters is general, and all at once, equally as general, the oyster becomes watery and flabby. However, on all the beds an oyster here and there is found which has neither been milky nor lost its condition all through the season of general spawning. Last year, however, the oyster was everywhere in good condition, from the winter of 1875 until this season's spawning took place, end of January, 1877. I might have noticed more of the habits of oysters, for my experience of them has extended over a period of sixty years, being since 1812 in the Colony, and aged twenty-three when I arrived, and for years, at the time before mentioned, I was constantly employed amongst them, chiefly on the southern shores of Botany Bay, where the bays to just within George's River were densely covered to an extent I have not seen equalled, yet I have seen most of the beds in the Colony. Then, however, oysters were only thought of for lime-burning; and nearly all Government buildings throughout the Colony were supplied therefrom. It has only been the result of the two several skinnings referred to leaving scarce an oyster to be got, which has particularly forced the subject on my notice, and the result is that only two seasons, viz., either 1866 or 1867 and 1872, have been prolific; all the others, that of 1864 to and including the present, 1877 have been unprolific, though in all save 1876 the oyster spawned; nevertheless, in no one season have the spat exceeded the proportion of one spat to twenty, thirty, or more older oysters.

Destruction of oysters.—The first set of skimmers, who came in 1863, picked them up in baskets and stored them on a shelving rocky flat on Wallis Island, blacks culled them, and all the young oysters were left to die; besides the schooner "Magnet" did not always come to time, and heaps of them died. But those dredgers got as many as twenty or thirty bags a day two men working together.

In 1869, the Manning men, some on their own hook; but two of them contracted to supply a Sydney man with 500 or 600 bags, which was got off No. 2 bed at the rate of 40 bags a day; (rakes and shovels were employed) then were shipped in a schooner, to lay down in Scott's Creek (Manning); however, it was reported that of this quantity all save 100 bags spoiled. Off same bed, and about same time, several men collected in a similar way 700 or 800 bags for shipment to Sydney; these were

stored by their camp on Oakey Island. However, the whole spoiled, and shortly after their departure from the district Tom Priestly erected a kiln, and with others made lime of the whole. These are the most remarkable cases of loss, but it is no unfrequent occurrence to have twenty to even 100 bags spoil, either while waiting shipment or by bar-bound craft. Eighty were thus lost the other day, although the poor man took every care of them, as it seems he suffers the entire loss. Then while all this skinning has been going on, not a single thing in the shape of improvement has been done even to the present moment.

JOHN PENNINGTON, Signal-master.

PORT STEPHENS LOWER FISHERY.

1. Both tidal and the few deep water beds, latter only round the rocky islets, formerly densely covered. Karun River and Limeburner's Creek, which contain nearly all the deep water-beds, examined only 2 miles up; therefore these remarks apply only to enclosed portion of plan: the other cut off. I have added Pipe-clay and Tellegarie Creeks, also Reedy Creek, all superior ground. Probably outline, lined by eye, may not be exact, but as to oyster ground it is.

2. Wantonly over-dredged, and tidal banks gathered and kept bare. Excepting a narrow fringe of inferior mangrove oysters round all low and marshy land, and the ordinary tidal rock oyster on the rocky points and islets; the tidal and whelk oyster on all the banks enclosed by blue line are of very superior quality. However, where formerly five and six bags were picked up in a boat's length or two, from half ebb to half flood—now not half a bag can be found on a mile of bank anywhere, nor from sunrise to setting. Corrie Island Creek, and yellow-coloured banks around west and south sides of Corrie Island were densely covered; now, however, shell-getters are stripping the bed and leaving puddles of soft mud in place of shell. Therefore, if this extensive bed is to be saved from complete destruction (a bed that would produce many thousand pounds worth of oysters yearly) *shell-getting* ought to be stopped forthwith. Besides, if any shell can be spared off it, it will, I apprehend, be all required in the culture of fishery.

3.—

(a) The points on south side from Nelson's Head to Tenalpa Point, and islands, excepting those in creeks, together with points of Fame Cove, and North Arm, North Shore, are of porphyritic rock, much broken. Everywhere else within blue line consists chiefly of sandy mud intermixed with shell, softish in parts, and more muddy and soft in middle of North Arm, west bend of Pipe-clay Creek, in Tellegarie Creek, and in Cromarty Bay; but in many places hard shell underlies from an inch or two to 2, 5, and 8 feet. On west side entrance to Pipe-clay Creek is bare pipe-clay running under the mud in bend, and here and there, running all over estuary, are found patches of shell bare, and also spread from bank to bank are three species of marine grasses, known as large and small turtle grasses, to which probably may be attributable the presence of numerous turtle; also several species of algae. Amongst this vegetation, oyster, cockle, mussel, and whelk seem to thrive equally well.

(b) Excepting the dense strip of inferior mangrove oyster above referred to, there exists not a marketable oyster from said strip to a depth of 3 feet low water spring tides, on any portion of these miles of the finest oyster-beds in creation for culture, and which the exercise of a little foresight might have had clothed with oysters worth £1 a bag for sale raw, or £2 to the country, preserved; for not in the Colony is a fishery more admirably suited in every respect for preserving purposes, whether it be oysters or cray-fish; of the latter it is not unusual for two men in one boat to catch 200 dozen in a night and commonly 20 to 50 dozen, besides being a fine feeding ground for every kind of fish we possess. In ledges and crevices of rocks not got at by dredge I find, by tongs, a fair quantity of mature oysters—the only mature oysters in the fishery. At times as many as forty boats have been employed at one time on the fishery, and for some time forty-five on the closing of the Hunter fishery. Indeed, until within the last twelve months, when the fishery could actually find existence for no more than four or five men, there has been not less than ten or twelve boats constantly employed from its first opening from fourteen to sixteen years ago.

(c) All the beds are more or less intermixed with shell and sand, and on the very softest if there is anything to which spawn can attach it thrives well. The only approximation to London clay is the pipe-clay bed already mentioned; and on it (the bare pipe-clay) I picked up many whelks, as on all the banks, with one, two, and sometimes three last years' spat affixed; however I am told that the oyster of this bed is superior quality.

4. All marshes are marked with blue ink, and portions of the whole are covered at S. tides, and portions only 1 to 2 feet above high-water-mark. Alluvium and vegetable mould intermixed with sand, and in many parts with shell. The land on the north shore belongs to A. A. Company; that on south side, Government. All these marshes are superior ground, and fine sites for trench culture.

5. Only in the crevices of rocks, around points, and islands have I found a single mature oyster, none aged two years; and relatively few last year's, and none of this year's spat.

6. A fine shell mound just north of Cromarty's farm. Shell, as above described, around Corrie Island, and indications of it underlying the whole of the island over the rock. Shell all over within blue line round the islets west of Soldier's Point; and much shell has been shipped there, though none engaged at it at present. Shell off mouth of Tellegarie and Pipe-clay Creeks, extending west from the former to Malabula to point fully a mile off shore; and east from the pipe-clay bed nearly over to opposite shore of creek, and under mud in Cromarty Bay, Fame Cove, and in North Arm. In many places bare shell around islands, and in patches over estuary; also on most of the islands, and on east side of Pipe-clay Creek where it has been dug.

7. Oysters spawned this season in December.

8. November and December are the months for deep water oysters, from Sawyer's Point up, and "bankers" in lower fishery, March and April; some of these are now spawning. There is no evidence whatever to show that any spawn all the year round.

9. In small areas, I find every person I meet on the fisheries, especially those formerly and now engaged thereon, aggrieved by present system, and the unscrupulous and domineering manner in which they are too frequently treated by lessees. All the dredgers believe that off a few acres of oyster-ground double at least of present pay may be more easily realised than by working on skinned beds; and much more pleasantly, because as the skinning process proceeds, to live, the price must be raised per bag, and this appears to be secured with great difficulty, although from 15s. to 25s. and 30s. or more per bag is realised by lessee. Therefore when they, as in this case, can get only from four to six bags a-week all this season, they think that 4s. for bankers and 8s. for dredge oysters, and many men, as in Manning, for eight bags a week at 5s., is not a fair division of profit, especially when to obtain that quantity the work must be from daylight to dark, where formerly, and they all allege if it were not for the greed exhibited by lessee in thinning and not improving our natural beds, four or five bags were, and could now be, obtained in as many hours.

10. Yes.

11. No. I have seen and heard sufficient to warrant me saying that if licenses be granted the skinning of beds would proceed as before, even in face of a close season of four or five months, unless expense were incurred in order to watch every bed and also to restrict every licensee to a given number of bags. Such course could only favour the few shop-keepers and dealers in Sydney, to the great detriment of Government in leasing oyster-ground, and in putting unnecessary expense on such lessees in stocking their beds. I believe it would answer every desirable purpose if each lessee were privileged, at a given fee, to dredge a given number of bags per season both as an encouragement, and as an assistance to improve lease as well as to live during the time that necessarily must elapse before his leasehold can become productive. And latter part of each close season, say twenty days might be allowed for the collection of spat off natural beds; also for a small fee, the privilege of getting shell for clutch. It appears to me such system would have greater force both as encouragement and restriction under a convenient plan of registering every bag sold than under one system of leasing, and another of licensing. Moreover, I apprehend it would give more satisfaction to residents of every description of the respective fishery districts, who, indeed, seem one and all fully aroused to a sense of the local importance of this industry. Then I also conceive it would be wise to consider the preserving aspect of the question, forasmuch as when even a small portion of the available oyster ground is in operation, more oysters will be produced than the demand for raw oysters would warrant; which, if no provision for preserving were made, would immediately influence further leasing and seriously affect leaseholders as well by reducing price; whereas provision for encouraging preserving

preserving would materially enhance present price and control its future. With this end in view fishery townships would be beneficial; and, indeed, in any case, I cannot conceive a possibility of doing without them. As in every case a landlord is expected to furnish a dwelling site, and convenience for carrying on the particular pursuit of his farming tenant; but this a water leasehold cannot afford, consequently a site of land should be attached to each leasehold.

12. I have neither seen nor heard of any. I am told 2,000 bags of mangrove oysters were laid on some of the up-river beds two years ago; but, as said in former reports, that is in no respect an improvement to landlord's benefit.

Gentlemen,

Your humble and most obedient servant,

A. B. BLACK.

UPPER FISHERY, PORT STEPHENS.

This is by far our most important fishery, not only on account of its numerous fine natural oyster-beds, banks, and extensive oyster-grounds (every spot contained in enclosed plan, to which I beg to refer for particulars, is good oyster-ground, and nearly all marshes, fit for trench culture), but also on account of its amazing productiveness.

It has been unremittingly worked fourteen years, not only by fifteen to twenty resident dredgers, and shell-getters of live oysters for limeburners, but also, as other less important or extensive fisheries got from time to time "skinned" the "skimmers" generally resorted hither in a body, in the fixed belief that though other fisheries failed, Port Stephens was inexhaustible. From time to time forty-five boats at once have been at work sending *spawning oyster and spat alike* to market. It is plain that no beds however productive could possibly withstand such exhaustive treatment. Accordingly, behold the results: probably not 1,500 bags young and old can at this moment be found on the whole fishery, quite capable if in fair condition of producing 30,000 bags yearly, without the least injuring its breeding stock. Besides in addition it possesses an inexhaustible supply of cray-fish, which with oysters are capable of furnishing all, either ourselves or neighbours want, of either article, raw or preserved, certainly as cheap and as good as they can be imported from America; and if beef didn't pay, there is no reason why preserving these articles shouldn't for the colonial market, if not for export.

With respect to productiveness as well as exhaustion, I beg to refer to enclosed statement of four respectable intelligent and experienced dredgers, every particular of which I have had fully confirmed, as well from other sources as from an accurate examination of the beds and fishery.

As regards *spawning*; of each off the seven beds therein referred to (which have been *partially* reserved, and in fact is the only "stand by" of importance), with the "tongs," I lifted, in each case, from a space not exceeding two square feet, fully 500, or about half a bag of oysters, which were lying one above another just as thrown down in the "clump," and which had lain thus undisturbed since April 1875, when laid. And so far from improving in consequence of crowding, they had certainly improved, at least as much as their fellows laid at same time, which were lying singly adjoining, for I compared them in each of the said seven beds one with the other.

But the most remarkable circumstance connected with the experiment is, that these "*mangrove oysters*" had in one year changed their time of spawning from their regular time, namely, April, to that of dredge oysters, viz., November or December, and also the fact of shaping themselves to a form similar to that of the latter. They must have spawned (as shown by the young oysters, two year old, abundantly attached) just as laid down. Then next year (equally shown by a fair crop of one year olds) to have spawned probably in December; then this season shown unquestionably, by a fair sprinkling of spat four months old, to have spawned at same season of dredgers in November and December, confirmed also by being in process of recovery. Hence may fairly be inferred (1st.) That oysters laid many tiers thick will thrive as well as if laid singly. (2ndly.) That lying more than one tier deep, the upper layers will fix more spawn as it rises than if lying either singly or only one tier deep on a bed, consequently the latter must be less productive even relatively than a well-stocked bed. Therefore skinning won't pay.

In addition to the suggestions dredgers submit in statement (which I venture humbly to recommend, not only on the merits thereof, but also because such seems to have been hazily floating in the brain of every dredger I have chanced to meet, without coherence or chance of emergence, there is also a strong desire expressed to be freed from the thralldom to which they are subjected by *Sydney buyers*. Happily, however, this could be as easily effected as it would be generally beneficial, viz.: by providing that all oysters arriving in Sydney be sold by auction at the Fish Market or other convenient spot, by public or Government salesmen, subject to a reasonable percentage, to defray cost of wharfage, transport, buildings, and salaries of salesmen, &c. Such course would fully accomplish the end desired, and certainly defray all necessary cost. Besides, why should fish-selling be so regulated with proved advantage, and that of oysters omitted?

Gentlemen, I have &c.,

A. B. BLACK.

STATEMENT of undersigned Dredgers constantly employed on Port Stevens Fishery, from its opening, 1862, until present time, April, 1877, all of of whom own land adjoining.

End '62 or early in '63, working to any extent first began; and unlike any other fishery, continuously ever since.

A line from Myall Creek south to Nelson's Bay marks eastern limit of payable ground. Recently, however, oysters have appeared on south shore, eastward; on both north and south shores westward; around shore, and banks; off all rocky islets; a little up some creeks, and to the head of navigation in others "bankers" abounded, and dredge oysters on numerous beds from Goat Island to head of Karuan and its several branches; also a thick crust of mangrove or rock oysters (generally unmarketable) exist everywhere in their separate limits, always in a line above that of bankers, which latter are peculiar to this fishery; and in quality equal to most dredge oysters, whilst the whelk variety are superior. The last two years about 2,000 bags were sent off annually.

March and April, '75, lessee had 2,000 bags mangroves laid down on seven different natural beds, which have improved less than was expected, and not so much as we severally have experienced in laying down dredge oysters.

Probably the sudden change of habitat influences the matter. Be that as it may, just after "laying" they spawned, and being clean, and laid several clumps thick, a good crop of spat settled on the "mangroves" alone, not on the other portion of either of the seven beds; also, singular to say, most of them spawned this year, but same time the natives of the respective beds spawned; and have just recovered condition. That fact, together with the strongly-marked tendency to grow into a similar shape to that of said natives, clearly points to the inference that all the aforesaid varieties may spring from the one parent; also that difference of shape, and habits, however great, is due to mere accident of position.

Measure of work.—'63, and six following years, not less (often more) than twenty boats were constantly at work. Then nigh twelve months after the "closing" of other fisheries more than forty half the time, and afterwards twenty to thirty boats, which continued till fishery was leased. The first year or two, of which, twelve to fourteen boats were employed until absolute scarcity reduced the number to seven, which also, from the same cause, have been, in the last eighteen months, reduced to four regularly, who eke out a living on their land. The balance of the seven come and go,—as any bush-work pays better and is easier.

Measure of "catch."—'63 to '70, the daily "catch" kept regular, but falling off towards '70; but as scarcity increased, so did labour to meet it. Early part of that time ten and even fifteen bags of bank or dredge oysters were got in five or six hours; the latter part it took twelve to fourteen hours to get that quantity. But after twenty of the forty boats mentioned left, the skinned beds would only yield ten to twelve weekly. Even this quantity gradually diminished till the past twelve or eighteen months; when work as we may, from daylight to dark, four to five bags weekly is the utmost obtainable of dredge and eight to ten of the best of mangrove oysters, at 4s. and 8s. respectively—raised from 3s. and 7s. by a recent "strike." None of the old bankers exist; hence the resort to mangroves.

Evidence of productiveness.—The "catch," as stated, conveys an accurate idea of that of the dredge oyster, whilst that of bankers will be understood by the following facts:—Captain Banks supplied Sydney and Newcastle limekilns with live oysters. He laid his schooner on the soft bank, raked together the oysters, and completed the loading within her own length around; and in those times we got ten bagfuls in length of boat.

Present state of banks.—The banks, formerly densely covered, are quite bare, not a thing on them to fix spawn, save the whelks on beds they affect, which often fix spawn, which as soon as marketable is taken, whelk and oyster together. Even the extensive and very prolific natural beds occupying the whole of Corrie Creek and surrounding banks to west and south are totally

totally abandoned to shell-getters, who are turning over its surface to procure a layer of shell from 6 inches to 2 feet thick under 1 or 2 feet of sandy mud. The bed is being rapidly destroyed for oyster-breeding, which for that purpose would be 100 times more value to the country than any value realised from shell-getting.

Use of shell in culture.—We fully agree with Mr. Black, that if dry bank-shell were strewn on banks or under-water-beds, at time of spawning, being clean, spawn would as certainly fix thereon as on stone or any other substance accidentally thrown on banks, a fact which is forcibly brought to our notice each spawn-time. Besides, shell would be less costly to lay and handle, and easier to separate from spat, consequently it is the best material for the purpose; therefore ought to be conserved for use of fishery before it is too late. But at present Church and School Department, A. A. Company, and Government are alike disposing of them as fast as possible.

Spawning.—Deep-water oyster from middle November to end December, and fully recovers by April; bankers and mangroves from 1st April to middle May, recover by August. From this course we know no omission; nevertheless only two cases of prolific spawning have occurred within our knowledge, and neither of those were general. First, in November, '67, which densely covered peach-tree bed and all the other beds; thence up to the head of navigation in the Karvan and its several branches, very thick on the extensive "middle bed." Second was November, '72, but only on Sawyer's Point, Connor's and mussel beds. It will be perceived by map that several main beds were omitted, and none since opening of fishery has been observed to settle in Limeburner's, Deep Creek, and in several of less importance. Notwithstanding, a dense covering of spat settles annually on both mangroves, and mud on Muddy Island, Swan Bay,—a low soft mud flat, covered with mangrove vegetation, and every tide flows over it. This islet alone would greatly assist in re-stocking the exhausted beds if a system were devised to admit of it; indeed, every year it is found that spawn settles here and there everywhere on all beds, but nothing of importance. In fact, all the ground west of Schnapper Island may with truth be said to be one vast oyster-bed, for clumps of oysters are found occasionally everywhere, both in deep and shallow water.

The several facts instanced constrain the adoption of the following inferences:—

- (1.) That, naturally, a prolific crop occurs at rare intervals, and by accident.
- (2.) That a bed bare of oysters cannot be expected to fix spawn as it rises.
- (3.) That spawn each year may readily, by means of shell used as above described, or other substances, be fixed in quantity to re-stock exhausted or supply artificial beds.

Hence we are induced to suggest, with all due deference, the following conditions, conceived by us best adapted to encourage culture and secure its success, viz.:—

- (1.) Long leases, say fifty years, rent encouraging; and for every future term, rent assessed by arbitration, tenant having option of re-leasing.
- (2.) In all cases lessees must reside on leasehold.
- (3.) That improvement of leasehold, in a given degree, must be compulsory on pain of forfeiture, on notice given, and without appeal, and without compensation.
- (4.) That the first few years, at least, tenant to possess the privilege of procuring, free of cost, stock off natural beds, also shell for clutch off dry-bank beds.
- (5.) A "close season" to protect natural beds, and at proper time enable tenant to collect spat for stock, also other necessary operations of culture not convenient in open season.
- (6.) Licences ought not to be granted; such would be direct encouragement of "skinning," as practised heretofore; besides, it would be impossible to prevent the plunder of private beds. Licencees would in the nature of things mostly be the unthrifty class of dredgers picked up in town by Sydney dealers for payment of license fee and a dredger's outfit, to be re-paid, with interest as usual, by consigned oysters.
- (7.) Fishery townships would be essential for dwellings and general conveniences of fishery operations and trade.

HENRY CURAN, Limeburner's Creek.

JAMES JOASS, Swan Bay.

JOHN HOLDOM, Sawyer's Point.

CHARLES EVANS, Carcarr Point, Swan Bay.

HUNTER RIVER.

It would require ten days at least for an examination of the Hunter equal to that bestowed on the northern fisheries reported on. However, what I could I have done in order to comply with the directions contained in letter dated 13th inst., and accordingly forward report to arrive a.m., Saturday 21st inst.

These beds, and oyster-ground relatively to those of northern rivers, are contained in a much narrower space; in form more compact; in shallower water; and seem to me to be better disposed than the most of them, both as respects conformation of land or channel, producing a favourable run of tide, and no intervening obstruction (as high land or heavy timber) to strong winds at spawning time, producing the necessary agitation of water to cleanse both oyster and clutch to a condition fittest to fix the rising spawn.

This reason alone seems sufficient to account for not only a greater abundance of spawn generally settling each year in this river than seems the case in those more to the north; also for some of the alleged anomalies of time of spawning, &c.

The state of clutch-beds, in hills and hollows, shows to what extent the beds have been misused, and even now the bow-dredge drags up as much shell as oyster.

All the beds rest on old shell-beds, hence are not so easily destroyed as those resting on less suitable bottom or on a thinner layer of shell.

Condition of Oyster-beds.—I tried all the beds in back-channels, but not all in main river, while I closely examined the operations and dredged oysters of each of the eight boats dispersed dredging on the extensive bay or Fullerton Cove bed. The back-channel beds, considering the generally exhausted state of beds to the north, may be said to be fairly stocked, and I think from inquiry judiciously worked. However, considerable vacant spaces exist wherever I tried; and in a "fleet" of 35 fathoms not a half-dredgeful could in any case be got, while on the bay bed, in about same length and a dredge 4 feet wide about, as said, four to five bags daily are got where formerly ten, fifteen, and even twenty bags under similar conditions were got, in five or six hours, instead of ten as now. Moreover, a great deal of what is got are two and one year old oysters, and comparatively few either mature or of this season's spawning.

Spawning.—Over all the fishery (save the few untried beds) the oyster presents an appearance of recovery from spawning, which would correspond with the age, three or four months, of the relatively small quantity of this season's spat observable; and without an exception, the age of the respective seasons' spawning—namely, '74, '75, and '76, are strongly marked and very perceptible on comparison, and none appear which may be classed at any intermediate age. Although all the dredgers referred to seemed to be suspicious and accordingly very reticent, yet I ascertained that some time back, about or before Christmas, oysters were spawning, a fact, they said, clearly observable by the white spawn flowing from them as tumbled out of the dredge on the stern sheets of the boat. I beg to draw attention to these facts, as against the manager's statement further on.

It may fairly be inferred from the above that, while the respective crops of '74 and '75 were tolerably prolific, that of '76 i.e., this season's crop, was a very poor one.

I have not yet discovered any evidence to lead to the supposition, contrary to the general law of nature and the current opinion of experienced men, that oysters spawn (as some few here allege) all the year round. It might, however, be as has occurred in the case of more learned men—the young of one species might be taken for that of another. Be that as it may, it is a generally accepted fact that weather and its concomitant effect on tides, their temperature, &c., hastens or retards, as the case may be, spawning to the extent of even six or eight weeks, which no doubt alike affects dredge and tidal oysters; the latter of which, if the case of Port Stephens be taken as conclusive (a fact known to all experienced dredgers) spawn on the average about four months later than the former; a change probably due, as observed in a former report, to difference of habitat, and not from difference of species, as shown by the extensive experiment of transplanting mentioned in report on Port Stephens fishery.

However,

However, as obviously the question of spawning will be of importance in connection with the future of the fishery, I humbly submit it would be desirable that arrangements be made to determine a question which must necessarily occupy several years.

Oyster-ground.—I may fairly say that every spot of tidal-ground, creeks, all Fullerton Cove, and probably the whole bottom of the river, is superior oyster ground, and the unalienated islets for trench-culture, and spots also suitable for fishery township sites.

Shell.—Limeburners adjoining east entrance to Fullerton Cove, on late Dr. Mitchell's land, is an extensive bed, apparently a very prolific oyster-bed before the present geological change occurred—a layer seemingly over all Spit Island; also a streak along fore-shore of A. A. Company's land.

The verbal statement of Mr. Anderson, Managing Lessee:—

- (1.) That oysters spawn all the year round.
- (2.) That September or October, '75, laid on skimmed bed close to Mosquito Island 600 bags "mangroves," which are slowly improving and growing to shape of nature of bed; but has paid no attention to their spawning.
- (3.) That river was closed four years three months prior to leasing, which was against—not favourable to increase,* shown in the bareness of beds on leasing.
- (4.) That first few months of lease worked pretty hard with seven or eight men, getting first part three bags, down to two and one daily, when the river was spelled for about six months; meanwhile had two men employed to keep beds clean, as mud is continually settling, but of course more in floods, which would bury oysters if left alone; and only occasionally got a bag or two of oysters. Then increased by degrees to six boats, and just before Christmas to nine; now averaging four to five bags daily, for which they are paid 4s. a bag; 234 bags weekly.
- (5.) Spelling beds is mainly ruled by state of market; when Brisbane and other oysters come in so as to glut the market we try to avoid it by spelling. We also possess an advantage by being in a position to ship direct to Melbourne whenever we please.

I have had a short conversation with three or four old experienced dredgers not engaged on fishery; their views precisely coincide with those expressed in the statement of Port Stephens dredgers.

I regret having no map, but have taken a rough sketch which can be readily transferred to the accurate nautical chart of the Hunter.

I have, &c.,

A. B. BLACK.

PORT JACKSON AND TRIBUTARIES.

January, 1877.

The Commission on Oyster Culture.
Gentlemen,

In obedience to instructions, I have the honor to append my report in respect to the oyster-bearing capabilities of Port Jackson and its tributaries, Parramatta and Lane Cove Rivers and Middle Harbour.

Replies to questions.

1. These rivers formerly contained large beds both of mud and drift oysters.
2. Yes, by over-dredging, and by the debris washed into them by the heavy rains.
3. There are quantities of drift oysters on the rocks, and in two or three parts the mud oysters are forming themselves into beds again.
 - (a) The banks are for the most part composed of sandstone rock, and soft mud on the shores.
 - (b) The rocks are partially and in some places literally plastered with oysters of all growths, from spat to fine well-sized oysters.
 - (c) There are beds of mud, principally of a very soft description.
4. Yes, mangroves on soft mud on the upper portion of the Parramatta River, covered at high tide. I am unable to distinguish private from public property, except those parts which are built upon.
5. The quality is very fine, age from spat to full-grown oysters. Bed confined principally to the rocks.
6. There is abundance of sandstone rock on the shores.
7. On Lane Cove and Parramatta Rivers good marketable oysters can be found all the year round; spatting is not confined to any particular season.
- 9 and 10. I do not think that these waters should be leased, but rather reserved for public recreation and closed during the winter months.
11. I think the spat might be removed with advantage to the growth of more mature oysters.
12. None of the natural oyster beds have been leased.

In the Parramatta River the most suitable localities I found to be from the point of Five Dock Bay to the Pennant Hills Wharf; also the bay near the Lunatic Asylum, the rocks at the mouth of Hen and Chickens Bay, and the main channel off Morrison's Bay.

Originally the oysters extended from Darling Harbour to the Flats in more or less quantities, but a few years back they became almost extinct from over-dredging—I refer to the mud oysters. I have no doubt that the sewage matter together with the light soil continually washing from the cultivated lands has tended in a great measure to destroy many of the beds which at one time gave abundant yield—in places where old catchers informed me immense beds existed I found on dredging nothing but a soft slushy mud.

On the bed off the Asylum the mud oysters are spawning, every one the dredge had collected was covered with brood and spat. This class of oyster is very large but of a coarse flavour, and will not keep more than (say) twenty-four hours after removal from the water.

The rock oysters are in fine condition, they have been so for some months and show no sign of change—they grow very quickly on the sandstone skirting the river and on the wharfs. Oyster-bearing foreshores exist only in small narrow strips, all else is mud of a soft nature, and the rush of water from the hills during wet weather would be very detrimental to artificial parks.

Soft mud is the usual bed formation of the river, and could not be utilized except at great expense. On the flats if the bottom were firmer, oysters could be fattened in great quantities.

In Lane Cove the rocks are covered with brood and ware—the formation is similar to that of the Parramatta River; it is only in narrow strips from Tamborine to Burns Bay, that oysters will lay. In this river Mr. Josephson laid down an artificial bed, and was very successful in his method of cultivation.

In Port Jackson oysters of all sizes and descriptions abound, especially on the northern side—in parts the rocks are really plastered with the mollusc. The beds are closed under the Oyster Bed Act and have been for some three years, and as the rocks are well within the view of the police the oysters are protected, and are a true index of what these waters will produce, even if left to the unaided efforts of nature.

In Middle Harbour brood and ware are plentiful, so much so that eighteen or twenty bushels per man per diem could readily be collected. The oysters here do not grow to any size, the water being too strong. Like Port Jackson, it is admirably suited for the production of brood and ware for layings in places more favourable to growth and fattening.

I am of opinion that it would not be desirable to lease these waters for oyster-fishing; they should be reserved for the use of pleasure-seekers, and the brood and ware utilized by removal to more genial localities.

Whatever may be learnt from other countries as to the various methods of oyster-culture, little is practically known as to their adaptability to the oysters on this seaboard; and if it is the intention of the Commission to recommend the artificial culture of oysters, it may be a prudent step to establish somewhere in Port Jackson or its tributaries an experimental oyster farm, where the several methods adopted elsewhere, and others which may be suggested, could be tried.

I have, &c.,

W. J. LANGHAM,

Inspector of Oyster Beds.

BOTANY

* Just as likely to be caused by poor crops the first year or two of closing, together with the "heavy rush" of dredgers on it while it was a few weeks opened just prior to leasing, in which time an enormous quantity of oysters were got.

BOTANY BAY, COOK'S RIVER, AND GEORGE'S RIVER.

To the Honorable the Commissioners for Oyster Culture.

Gentlemen,

George's River, February, 1877.

In obedience to instructions, I have the honor to report, for the information of the Commissioners the result of my examination into the oyster-bearing capabilities of Botany Bay, George's and Cook's Rivers.

- 1.—They were all largely oyster-bearing.
- 2.—By over-dredging, exposure to easterly gales, and sand drifts.
- 3.—Replies to these questions may be gathered more conveniently from my report in chief.
- 4.—Marshes exist on the south side of Botany Bay and Cook's River, and in one or two parts of George's River; they are chiefly soft mud and sand. I am not aware to whom they belong.
- 5.—Of all qualities, sizes, and ages, and, as will be gathered from my report, principally in George's River.
- 6.—Dead shell and rock on south side of Botany Bay, and all rock in George's River.
- 7.—The time of spatting is consequent upon the seasons and depth of water.
- 9.—Moderately sized areas.
- 10.—Yes.
- 11.—Yes.
- 12.—The only considerable improvement is in George's River, opposite Mr. Emerson's residence, and referred to in the appended report.

Botany Bay.

In my examination of the water, I failed to discover any live oyster, except a small bed in Marbray and Keeney Bays, chiefly a deposit of spawn on the mangroves. However, I discovered a large extent of dead mud-oyster-shells, extending from the old wharf at Sans Souci to Sandringham for and upwards of a quarter of a mile in length, with a mean width of 170 yards. Overlaying it is a crust of small shells and sand, and a species of coarse coral which was alive with marine insects. I was not able to ascertain the depth of the deposit, but after cutting through the crust the dredge showed nothing but clean dead shells. This deposit was totally devoid of live oysters or spawn. The whole bed of the bay, with the above exception, seems to be composed of dead shell smothered with drift sand. And however important the bay may have been as regards its oyster-bearing capabilities in former times, it seems to me that, owing to its exposure to easterly gales, and the eddies produced by the tides, causing the sand-drift to distribute in all directions, it cannot now be relied on as a field for oyster culture.

Cook's River

Is totally devoid of oysters. The mollusc was once plentiful in it, but it has not been worked for nine or ten years. The banks are composed of soft clay and overlaid with drift-sand, and, like Botany Bay itself, is by no means a desirable field for culture, i.e. to say, it would take a large outlay of capital to make and form beds in it, which on other rivers could be formed at comparatively little or no cost.

At the risk of exceeding my instructions in another respect, I will venture to remark on the system of "stalling" in connection with net-fishing, which is practised in these and other waters. The system is to fix stakes at the north of shallow bays. The fishermen combine and join their nets, so as to extend the whole width of these bays. This is done at high-tide. At low-tide the bays are left dry, and fish of all descriptions and size are thus caught. The marketable fish are collected, and the remainder in proportion of at least two-thirds in number are left to die in the mud. The practice is so general that the destruction of fish is immense—almost beyond calculation. Without fear of contradiction, I can assert that not only in Botany Bay and its tributaries, but in every water within reach of the Sydney Fish Market, there is not a bay in any suitable inlet in which this "stalling" process is not carried on.

George's River.

I inspected this river from the Salt-pan Creek to its mouth. It is at present under lease to Mr. A. Emerson. The mode of catching oysters on this river is by diving and the tongs. Owing to the rocky nature of the bottom the dredge is seldom used. Mr. Emerson has introduced a very complete diving apparatus, by which, with the aid of a covered punt, he can take oysters in most weathers. He has from twenty to thirty persons in his employ on the river. Some of them are South Sea Islanders, who dive in the shallow parts where the depth does not exceed say 10 feet.

These also collect fine marketable oysters from the rocks; indeed, the oysters in the river as a rule grow in the crevices and on the rocks even in the deep water, and can be obtained by the help of the diving apparatus. The banks and the bed of the river between the rocks is composed of a very soft description of mud, quite unsuitable for carrying oysters. The oysters are a fine sample, one of the finest brought to market. They are very prolific, exhibiting an unusual growth in a given period.

I note one exception to the generally soft nature of the mud of the river; it is in Snake Bay, where there is a bank on which oysters would readily grow and fatten.

I should not omit to give special mention to an effort made by Mr. Emerson to improve the already naturally great oyster-bearing capabilities of this water.

In the bay just fronting his residence he has stocked an old natural bed with brood he obtained from Port Hacking about two years and a-half since. The bed is about a 1/4 of a mile in length by 150 yards in breadth, and on it were deposited several thousand bags of brood. This brood has now developed in the comparatively short space of two years and a-half into a fine, large, well-flavoured oyster. I can speak with confidence in respect to the fact, inasmuch as I had the opportunity of seeing the brood soon after it was laid down, and a more misshapen unpromising article it was almost impossible to conceive.

The Wooronora is a tributary of George's River; is not suitable for oyster culture, its beds being composed of sandy flats.

I have, &c.,

WM. J. LANGHAM,

Inspector of Oyster Beds.

CROOKHAVEN AND SHOALHAVEN.

The Commissioners of Oyster Culture.

Gentlemen,

I have the honor to report upon oyster-beds, Crookhaven and Shoalhaven.

Replies to questions.

- 1.—As prolific as any in the Colony.
- 2.—Yes, and but for their remarkably recuperative powers would now be entirely destroyed.
- 3.—
 - (a) Principally of mangrove swamps.
 - (b) The few rocks which exist are covered with brood and oysters.
 - (c) Mud and shell.
- 4.—Yes, wholly covered at high tide—mud and mangrove.
- 5.—I have set this out in my general report.
- 6.—Only the red stone mentioned in my report.
- 7.—Spatting depends on the seasons.
- 9.—Moderately sized areas.
- 10.—I think the Government should retain all natural beds in its possession.
- 11.—Yes.
- 12.—None.
- 13.—I have nothing to add, except to record a generally expressed opinion that the present monopoly of oyster-bearing waters should be broken, and that the industry should be made available for the general public.

The

The oysters commence at the south-east side of the Crookhaven River; they are found on the rocks in large quantities, and they extend up the river in the mangroves for a distance of four miles; besides these, are three very prolific natural beds, averaging (say) one hundred and seventy yards in length by thirty yards in breadth. The bed oyster is large and well flavoured, and at maturity is as fine a sample as can be shown in the Sydney market. These beds are composed of mud and shell, and their average yield I estimate under proper care and working would be about three thousand bushels per annum.

Curly's Bay, an inlet from Crookhaven, and almost dry at low-water, is skirted with oyster-bearing mangroves; these oysters require some cultivation to mature them, but the lessee sends them to market in an immature state; they have borne in great quantities, but the constant stripping for market has reduced them very considerably. There is a large area immediately adjoining their habitat on which they would readily grow and fatten with no labour or expense beyond the mere laying down; the cost of such laying would be (say) four-pence per bushel. The brood is more than sufficiently abundant to stock the whole of the present unused oyster-bearing ground in the river. Besides the mangroves, there are in Curly's Bay five small mangrove islands, which, with one exception, are covered at high tide—they abound with brood; some of the smallest of it the lessee lays down in the channel in a depth of (say) three feet at low-water; the larger, though not marketable, he sends to Sydney for sale. There are deposits of a red stone admirably adapted for use in the formation of artificial beds, and by its use a large extent of at present soft mud flats could be turned to a useful account.

Comeroug Island separates the Crookhaven from the Shoalhaven River. A portion of this island is a mangrove swamp, and is prolific in brood, as also are three adjacent islands, which are wholly covered at high tide. The entrance from the Crookhaven to the Shoalhaven is by a dyke formed by the late Mr. Berry. The oysters accumulate on the stones here, and grow very fast; they would be a first-rate marketable sample at two years and six months, but as is usual here as in other places, they are not allowed to remain long enough. The scour of water in the dyke seems to exert a very beneficial and marked influence in the growth of the oyster.

On the Shoalhaven there is a belt of mangroves near the mouth at Coolangatta, opposite the residence of Mr. David Berry; they are not so extensive as those in Crookhaven, but the oysters on them grow with equal luxuriance. The bed of the Shoalhaven is composed chiefly of sand and debris from flood deposit.

In Broughton Creek, a tributary of the Shoalhaven, there are four small natural beds, which, under proper care and culture would yield annually (say) twelve hundred bushels, but at the present time they are almost bare. I form my estimate by previous knowledge of these beds.

The lessee is non-resident, and very little if any care is bestowed on the property; he seems to be content to reap the natural products, not even giving time for those products to arrive at maturity.

In concluding this report, I take occasion to remark generally upon the very little interest lessees take as to improving their holdings; they for the most part seem satisfied with Nature's efforts, and never dream of bestowing attention on their properties; the result must be, to exhaust the oyster-bearing capabilities of the waters of the Colony, and to destroy an industry which, if carefully protected, might afford a means of livelihood to thousands.

I have, &c.,

W. J. LANGHAM,

Inspector of Oyster Beds.

JERVIS BAY AND TRIBUTARIES.

March, 1877.

To the Honorable the Commissioners for Oyster Culture.

Gentlemen,

I have the honor to report on the oyster-bearing capabilities of Currumbene, Cabbage-tree, and Moonie Creeks, tributaries of Jervis Bay, and as far as practicable of the bay itself, and in obedience to instructions have to report as follows for the information of the Commission.

Replies to questions.

- 1.—I have not made a previous inspection.
- 2.—No, they have not been much worked.
- 3.—
 - (a) A mixture of the three, with the addition of slate-rock—sand predominating.
 - (b) To a considerable extent covered.
 - (c) One bed in the upper part of Currumbene Creek of a rich clay.
4. Yes, to a large extent sand mixed slightly with mud—could not ascertain—shown on tracing.
5. From brood to full-grown oysters. This is stated in the appended report.
6. Clay and slate rock.
7. The time of spatting is affected by the seasons and depth of water.
9. Moderately-sized areas.
10. Yes.
11. Yes.
12. These waters are not under lease.
13. See appended report.

Currumbene Creek.

Oysters exist on the banks and bed of the creek, those on the banks being found on the mangroves and cobbles' pgs. They commence on the north side of the creek about five hundred yards from its mouth. The oyster bed is composed of mud mixed with sand, and extends in unbroken length for a distance of about half a mile up the creek, having a mean breadth of twenty-five yards. Along the banks the oysters are found in patches for a distance of a mile and a half.

On the south side oysters commence at about three hundred yards from the mouth. The formation is rock, large mangrove swamps extending back from the creek for say a quarter of a mile. The oysters on this side are in patches and scattered, and they extend up the creek to the same distance as those on the north side. Some at low-water-mark are marketable. I estimate that between three and four thousand bags of young oysters could be collected out of the creek every second year, and if removed to a suitable place would be marketable in (say) one to two years.

There are three beds of dredge or drift oysters, situated about one and a half mile up the creek from the mouth; the dimensions of the beds are about one hundred yards by twenty yards; they have been worked by fishermen and the blacks; they are in a depth of from two to four feet of water at low tide. The formation of the bed is soft rotten rock (I shall have the honor to submit a sample). The shells are of a dark green colour, covered with moss.

I discovered in this creek a bed of drift oysters, which it appears is not known to either fishermen or blacks. I assume it to be of comparatively recent formation. The oyster, which is a very fine sample, is covered with moss, the shell being quite dark in colour. The bed lies in ten feet of water at low tide. The banks are of stiff yellow clay.

The natural beds in the creek are evidently very prolific, having a splendid bottom, could be easily worked and improved. The bed of the creek at the entrance for a distance of a mile is soft drift sand.

Cabbage-tree Creek.

Situated on the north-east side of the bay, is about two miles in length; it contains no oysters. The banks and beds are composed of a very fine drift sand, with mangrove swamps composed of soft mud and sand. At low tide at a distance of a quarter of a mile from the mouth the water is not more than one foot at its deepest part. Kelp and sea-weed wash into the creek from the bay during southerly winds in great quantities; it will therefore be apparent to the Commission that the creek is not by any means suitable for oyster culture.

In the lake at the mouth of the creek I found, in about ten feet of water, a bed of mud oysters, and another similar bed at the Hole-in-the-wall near the Light-house. Owing to the heavy roll of the sea I was unable to test the extent of these beds. They are not disturbed by the oyster-catchers, the oysters being of a description that will not keep out of the water for more than twelve hours; I shall not, therefore, unless specially directed, spend time in making further inspection during more favourable weather.

Moonie

Moonie Creek.

Lies about half a mile south of Currambene. Oysters are found on the mangroves and cobblers' pegs for a distance of three-quarters of a mile, chiefly on the south side. The bed of the creek is composed of loose sands, the banks are mud and soft sand.

It is very desirable that the mangroves in these creeks should be preserved for oyster-breeding; they are of very large extent, and I am told in places where they are destroyed the banks soon become sandy, and so unfit to bear oysters.

I have, &c.,

W. J. LANGHAM,

Inspector of Oyster Beds.

BHERWERRE (ST. GEORGE'S BASIN), JERVIS BAY.

The Honorable the Commission on Oyster Culture.

Gentlemen,

In obedience to instructions, I have the honor to append my report on Bherwerre (St. George's Basin), Jervis Bay, and adjacent waters:—

Replies to questions.

1. I have not been able to ascertain.

2. So far as I am aware they have not been worked.

3.—

(a) Mangrove marshes and bold banks of raw sand.

(b) Slate rock, and partially covered with oysters.

(c) No.

4. Yes—covered at spring-tide—soft mud and sand.

5. Quality good; large size from spat to full-grown oyster; only one bed, 150 yards × 30 yards.

6. Nothing available.

7. At the time of my inspection (March) they were beginning to spat; I believe the spatting goes on all the year round.

9. In moderately sized areas.

10. I think they should not be leased.

11. Yes.

12. The beds have not been leased.

13. This will be replied to in the course of the report I append.

Bherwerre Creek, the inlet to St. George's Basin, is situated about 12 miles south of Jervis Bay; it contains a natural oyster bed of a slate formation; the oysters are of a fair average quality and size; at the mouth of the creek there are a few on the rocks, and the mangroves in the marshes contain them, but not in any material quantity; the mangroves are in patches on either side of the creek; I have shown their positions on the tracing.

About 3 miles up the creek, near a tributary named Salt-water Creek, I found a small bed of a soft description of slate, carrying, according to my estimate, about 150 bushels of a very fine oyster. The bed of the creek at that part is composed of slate rock and dead cockle shells; the depth of water is about 4 feet, with a fine run of tide, and seems admirably adapted for carrying oysters; I have no doubt that brood laid down there would thrive admirably, and that oysters would become abundant wherever this slate formation occurs. With one or two exceptions, the remainder of the bed of the river is a coarse, raw sand. I should remark that the oysters in the mangroves where they are covered with water are as a rule enveloped in a kind of moss; at the present time they are in first-class condition, indeed I do not call to mind having seen mangrove oysters in other rivers so full of meat.

To some ballast discharged last October twelvemonth, a species of mud oyster have attached themselves; oysters of this description are not found in any other part of this water. The mangrove swamps have sandy bottoms, consequently the oysters extend a very short distance back from the banks.

In the basin under a bold rocky headland known as Stock-yard Point I discovered a few scattered oysters, and this is the only spot in the basin where they exist, and neither in Con or Wandandian Creeks could I find any trace of the mollusc; but having a few in the boat, I discharged a part into each creek as an experiment. I hope on a future visit to ascertain how oysters will thrive in these still waters where there is neither rise nor fall of tide.

Cadimurrrah or Swan Lake (locally known as Goodmire) is about 15 miles south from Jervis Bay. So far as I was able to ascertain during a searching examination, it does not contain any oysters. The inlet from the sea is about 1 mile in length. Its banks and bed are composed of raw sand, and a large portion of the lake is of similar formation. The remainder is of rock, extending at a shallow depth for a considerable distance towards the centre. This rock is as smooth as if paved. On it I placed some oysters as a means of further testing how far oysters will thrive in still water. If the experiment prove successful, this lake could be made immensely productive. At the time of my inspection it was literally alive with floating fish.

Barrarah Creek is about 16 miles south from Jervis Bay. I found a natural oyster-bed on the sandstone formation, about a mile from its mouth, on the north side. The bed extends for a distance of a $\frac{1}{4}$ of a mile. The rock-oysters grow to a very fair size, and are in good condition. I believe if they were transplanted they would in a short time become a first-class sample. I estimate that 300 bushels of rock oysters could be taken at the present time.

The bank and bed of the creek on the south side are of raw sand, and not, therefore, oyster-bearing.

I take occasion to acknowledge the attention I received from Mr. James Dent, of Jervis Bay, and Mr. Charles Gordon, of Bherwerre. Those gentlemen afforded me most material assistance. Mr. Gordon was good enough to place his services and his local knowledge at my disposal for more than twelve days, and thus enabled me to effect considerable saving of my own time.

I have, &c.,

W. J. LANGHAM.

CLYDE RIVER.

Clyde River, 18 April, 1877.

To the Honorable the Commissioners for Oyster Culture.

Gentlemen,

In obedience to your instructions to me, I have the honor to state, for the information of the Commission, that I have inspected the above-named river, and report as follows.

Replies to questions.

1. Great quantities of oysters were obtainable almost in any part of the river twelve years back.

2. Yes, chiefly by over-dredging and floods to a great extent; for in the year 1865, I am informed that no less than sixteen boats were employed at one time, averaging a catch of not less than ten bags each per day; whereas, at the present time, about two to three bags are considered a good day's catch.

3. The beds in the river are at the present time almost completely exhausted; both the bank and drift oyster-beds are worked out.

(a) The banks and beds are chiefly composed of slate-rocks, which run north and south, quite irrespective of the course of the river; in some parts the reefs run from one side to the other, with mud in between them.

(b) The rocks and mangroves are partially covered with spat and oysters.

(c) Yes, beds of mud on the shores between the bold slate rocky points.

4. Yes, there are mangrove swamps covered at high tide of a large extent, and composed principally of oyster mud. They commence on the south side of the river near the residence of Mr. McLeod, close to the township of Bateman's Bay, and extend up the river for 6 to 8 miles, except where they are intercepted by the reefs and rocky shores. I am not aware to whom the swamps belong.

5. From spat to full-grown oysters.

6. Slaty rock, of which there is abundance.

7 and 8. The spatting is generally said to be from about the month of December to March. Seldom it is that two persons agree as to the time. My own opinion, as stated in other reports, is that it varies with the weather and depth of water. I observed spatting on some beds, while on others there was no sign of it.

9. I do not think they should be leased all in one, but in moderately sized areas.

10. I do.

11. Yes.

12. The lessee has not in any way improved the beds of this river since it came into his possession. He has laid down some young oysters on the mud flats and other suitable places, but removes them for market before they come to maturity, thereby exhausting the banks and beds.

This river is at present under lease to Mr. F. J. Gibbins, who resides in Sydney. It is under the charge of Mr. Latter. The oysters are first found in a large mangrove swamp, on the south side, near the residence of Mr. McLeod, and extend upwards on the north side as well for a distance of 6 or 7 miles. The bank near Mr. McLeod's was formerly the best in the river; it is now almost bare. Its dimensions are $\frac{3}{4}$ of a mile in length by 400 yards in width. On the mangrove swamps and banks of the river generally there are very few young oysters to be seen. Two years since they were in abundance. In the beds of the river the drift oysters have also become very scarce. At present only three boats are at work on the Moonlight bed, and they obtain from two to three bags per day. This bed is composed of dead mud oyster shells, to which the oysters have culched. It is the best place in the river at present. On the Rocky Point bed, the next up the river, it was no uncommon thing twelve years since for one boat to catch twelve to fourteen bags per day; and from the Chinaman's bed and reach the export weekly was from 800 to 1,000 bags. The present export does not exceed sixty bags.

With the assistance of Mr. Latter I was enabled to test some of the best of the old beds, viz., Bold Shore, Ices, Goat Island, Ireland's Point, and Templeman's—and in no case did the dredge bring up more than one-eighth of a bushel, and in some cases three or four oysters only. The depth of water on the dredging grounds varies from four to forty feet.

This river, unlike most of the others, had not the advantage of being closed before it was leased; indeed it was always open to oyster-catchers. I may perhaps be permitted to suggest that it should, if possible, be closed for two or three years and placed in charge of some responsible officer. As the river is so bare of oysters, I should imagine that such a course would be quite consulting the interests of the lessee, and the more so if he were allowed some reduction in rent during its closed period.

As will be gathered from my several reports, mangroves form a most important item in the economy of the oyster; therefore, in the prosecution of oyster culture, every care should be taken to protect and encourage their growth. On the river, they are at the present time being cut down for fodder in large quantities: the effect is not only to lessen the cultch field, but the very soil on which they grow becomes changed in a short time from a consistent mud to a boggy sand, also, the saw-dust from the timber mills is discharged into the river, and must have a very deteriorating influence on the growth of the oyster. These are difficulties against which the lessee has had to contend, and should be taken into consideration in accounting for the bare state of the river.

It has been said that drift oysters will not grow on the natural beds. Possibly this may be accounted for by the fact that no sooner is a small patch of oysters discovered than it is immediately cleared. A close season will best prove how far the assertion is correct.

I append two letters—one from Mr. Barclay, twelve years' resident on the river, and the other from Mr. Templeman, an old oyster-catcher. The writers are known and respected.

I have marked on the tracing the localities referred to in this report.

I have, &c.,

W. J. LANGHAM,

Inspector of Oyster Beds.

Clyde River, April 18, 1877.

I, JAMES BARTLEY, have been engaged in the oyster trade on this river for the last twelve years. For the first two years I was able to obtain from nine to ten bags per day; after that time it gradually came down to as at present. A man cannot average more than from three to four bushels per day, working ten hours.

I wish also to mention that I was engaged on this river to lay down young oysters on beds. On one alone I laid 3,000 bushels, all of which were doing well up to the time of my leaving the employ of the present lessee. These have been sent to market before they came to maturity, and have not been replaced; in fact, there is not sufficient young oysters on the river at present to do it with, the river being so bare.

Spawning.—The number of years I have been engaged as an oysterman, I have paid great attention to the spawning of oysters, and I am perfectly convinced that oysters on different beds spawn at different times, some early some late in the year, there being no particular season on this river I am satisfied.

The deep-water beds which were so prolific ten to twelve years since have never recovered on beds made again on them; at Chinaman Rocky Point and the old bed it was no unusual thing for one boat with two men to obtain from fourteen to fifteen bags per day at that time. And am convinced if these beds are not stocked with brood that they will never recover of their own accord, the bottom being so dredged that nothing is left for the spawn to attach itself to.

JAMES BARCLAY.

Nelligen, Clyde River, N.S.W.

I, THOMAS TEMPLEMAN, have been an oysterman sixteen years on the Clyde River, and was able to obtain from six to ten bags per day up to the time of the river being leased, at which time myself and sons, and many other families, were deprived of the means of obtaining a living at our usual avocations.

THOMAS TEMPLEMAN.

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